Air Quality Monitoring

Northwest Edmonton

Alberta Environment

June 2001 to March 2002 Interim Report

Summary

Alberta Environment is currently conducting an air quality monitoring survey near the Inland Cement facility and adjacent to Yellowhead Trail in northwest Edmonton. The survey began in June 2001 and is expected to be complete in September 2002. Alberta Environment will release a final report detailing the results of the survey by the end of 2002.

The data and information presented in this report is preliminary. Therefore, conclusions regarding air quality and specifically particulate levels in northwest Edmonton should not be drawn until the completion of the study. The information presented in this report is a summary of available data from monitoring activities conducted from June 2001 to March 2002.

The northwest Edmonton air monitoring survey was initiated based on public concerns regarding air emissions from the Inland Cement facility and the proposal by Inland Cement to convert fuel from natural gas to a combination of coal, petroleum coke and natural gas. The objectives of the survey are to:

(1) determine air quality levels downwind of Inland Cement and Yellowhead Trail,
(2) determine background air quality levels in northwest Edmonton, and
(3) compare these levels to Alberta's air quality guidelines and to permanent monitoring stations in Edmonton.

The monitoring survey utilizes stationary particulate monitors and Alberta Environment's *Mobile Air Monitoring Laboratory* (MAML).

Particulate Monitoring Component

Particulate matter emitted from Inland Cement has raised public concerns in northwest Edmonton. These concerns were conveyed to the Department during the Environment Minister's Public Meeting that was held on May 14, 2001 related to Inland Cement's proposed fuel conversion project. While Alberta Environment has a permanent air monitoring station in northwest Edmonton, it was decided to install additional monitoring capacity in order to investigate particulate matter levels in the vicinity of the Inland Cement facility.

ISBN No 0-7785-2157-5 (Printed Edition)
ISBN No. 0-7785-2158-3 (On-Line Edition)
Pub No. T/401 (Printed, On-Line Edition)
May 23, 2002

Alberta
ENVIRONMENT

Alberta Environment is monitoring large particles referred to as total suspended particulates (TSP) and smaller particles called respirable particulates ($PM_{2.5}$) at four monitoring sites in northwest Edmonton. An additional inhalable particulate (PM_{10}) monitor was added at one location in January 2002. TSP refers to larger particles up to 500 micrometres in diameter that are important primarily from a nuisance perspective. A human hair is about 70 micrometres in diameter. PM_{10} are particles less than 10 micrometres in diameter that can be inhaled into the nose and throat. $PM_{2.5}$ are particles less than 2.5 micrometres in diameter, also called fine particulate matter; they are important from a human health perspective as they can penetrate deep into the lungs. Ambient particulate matter originates from natural sources such as soil, dust, fires, and plant pollens, as well as from anthropogenic (human) sources including agricultural practices, forestry, combustion processes, transportation and industry emissions.

Particles may be emitted directly (primary particles), or formed in the atmosphere by transformation of emissions such as nitrogen oxides, sulphur dioxide, and volatile organic compounds (secondary particles). Primary and secondary fine particles can have lifetimes of weeks in the atmosphere and are able to travel hundreds to thousands of kilometres. They tend to be uniformly distributed over urban and regional areas. Coarse particles have lifetimes ranging from minutes to hours and travel short distances (less than 10 kilometres). Hence distribution of coarse particles is less even, leading to more localized effects.

Particulates are being monitored in northwest Edmonton using continuous and intermittent monitoring instruments. Continuous monitors collect data on an hourly basis while intermittent monitors collect data as a 24-hour concentration every sixth day in accordance with the National Air Pollution Surveillance (NAPS) schedule. Particulate samples collected using intermittent monitors are being analyzed for elemental composition including metals such as zinc, arsenic, magnesium, chromium, nickel, lead, mercury, copper, tellurium, cadmium, cobalt, selenium, vanadium and antimony. Alberta Environment installed continuous and intermittent particulate monitoring equipment at the four locations indicated below (also see Table 1 and Figure 1 on pages 6 and 7).

- **Edmonton Northwest Monitoring Station (existing station):**
  This is the permanent Alberta Environment monitoring station located at 13335 - 127 Street. Particulates (PM_{10} and $PM_{2.5}$) are monitored continuously at this station. Other parameters monitored continuously at this station include oxides of nitrogen, carbon monoxide, dust and smoke, ozone, hydrocarbons, wind direction and wind speed. Additional intermittent TSP and $PM_{2.5}$ sampling started on June 30 and July 6, 2001, respectively at this station. Elemental analyses are being conducted on TSP and $PM_{2.5}$ samples. This station is considered representative of air quality from urban sources (primarily vehicles) in northwest Edmonton.
- **AADAC Monitoring Site:**
  This site is located at the AADAC Youth Services building at 12325-140 Street. Continuous $PM_{2.5}$ monitoring began at this station on August 17, 2001. Additional intermittent TSP and $PM_{2.5}$ sampling also began on August 17, 2001. Elemental analyses are being conducted on TSP and $PM_{2.5}$ samples. Wind direction and speed are continuously monitored at this station. This site was selected to represent a typical residential neighbourhood in northwest Edmonton.

- **Polytubes Monitoring Site:**
  This station is located at Polytubes on 12160-160 Street. Intermittent TSP and $PM_{2.5}$ sampling began at this site on June 30, 2001. PM_{10} sampling, wind direction and wind speed monitoring were added to this location on January 26, 2002. Elemental analyses are being conducted on TSP, PM_{10} and $PM_{2.5}$ samples. This site is located adjacent to the Yellowhead Trail, and to the south-southeast of the Inland Cement facility, and therefore predominantly downwind of Inland Cement. However, there are a number of pollution sources in the vicinity of this monitoring including traffic on Yellowhead Trail and local service roads as well as other small industries.
- **Unisource Monitoring Site:**
  This station is located at Unisource Canada Inc. on 16408-121A Avenue. Intermittent TSP and $PM_{2.5}$ sampling began on June 30 and July 12, 2001, respectively. Elemental analyses are being conducted on TSP and $PM_{2.5}$ samples. This site is located adjacent to the Yellowhead Trail, and to the southwest of the Inland Cement facility, and therefore predominantly upwind from Inland Cement.

Mobile Monitoring Component

Alberta Environment is using the *Mobile Air Monitoring Laboratory* (MAML) to conduct four seasonal air quality surveys in northwest Edmonton. The MAML continuously monitors for carbon monoxide, oxides of nitrogen, ozone, particulates (TSP, PM_{10} and $PM_{2.5}$), hydrocarbons, sulphur dioxide, hydrogen sulphide, total reduced sulphur and ammonia. Since the MAML is a mobile unit, it can monitor at several different locations within a specified monitoring area. Also, the MAML uses continuous monitoring instruments that allow immediate access to air pollutant concentrations.

The summer seasonal survey took place on June 18, 19, 21 and 22, 2001 and the fall survey took place on November 14, 19, 22 and 30, 2001. The winter survey took place on January 9 and 10 and February 19 and 21, 2002. The MAML collected 144 hours of data over this 12-day monitoring period. Ten locations were monitored; each location was monitored for a minimum of one hour to allow comparison to air quality guidelines. The spring seasonal survey will be complete by the end of May 2002. Close to 200 hours of data will be collected by the MAML during the entire survey.

The ten sites monitored by the MAML in the summer, fall and winter surveys are indicated below (see Figure 1 on page 7):

Site #1A North side of Yellowhead Trail 300 m east of 170 St.
Site #1B Unisource - 121A Ave. and 165 St.
Site #2A Mistatim Industrial - 129 Ave. and 165 St.
Site #2B Mistatim Industrial - 128 Ave. and 160 St.
Site #2D Polytubes - 123 Ave. and 160 St.
Site #3A Brown Industrial - 153 St. and 128 Ave.
Site #3B Yellowhead ABS Casino - south side of Yellowhead Trail and 152 St.
Site #4 Wellington Park - 135 Ave. and 137 St.
Site #5 Dovercourt - 123 Ave. and 140 St. (AADAC Bldg.)
Site #6 Sherbrooke Park - 122A and 131 St.

The MAML is a 27-foot (8.2 m) vehicle that has been specially designed and equipped to measure air quality. It houses a variety of instruments that continuously sample the air at specified time or distance intervals. The MAML is equipped with:

- A dual computer system custom-programmed to accept and record the measurement of air samples from each analyzer.
- A GPS (Global Positioning System) that identifies the MAML's location as it moves around Alberta.
- An exhaust purifying system that minimizes emissions from the vehicle.
- Two on-board generators that are also equipped with exhaust scrubbers.

Preliminary Results

Data collected from the particulate and mobile air quality monitoring components of this survey are presented relative to Alberta's Ambient Air Quality Guidelines[1], Canada-wide Standards[2] and Ontario's Ambient Air Quality Criteria[3] where appropriate. The following are preliminary results based on data collected in northwest Edmonton from June 2001 to March 2002.

(1) The Canada-wide Standard (CWS) benchmark concentration for $PM_{2.5}$ was exceeded several times in northwest Edmonton during the monitoring survey. These elevated $PM_{2.5}$ levels were likely caused by:

- Smoke from forest fires in southern British Columbia in August 2001, and
- Emissions from fuel combustion (transportation, industrial, residential heating) in northwest Edmonton during stagnant weather conditions in December 2001 and January 2002.

Based on $PM_{2.5}$ data collected with continuous monitors from July 2001 to March 2002, the CWS benchmark concentration was exceeded on five days at the Edmonton Northwest monitoring station and one day at the AADAC monitoring site. The maximum 24-hour $PM_{2.5}$ concentration was 53.1 $\mu g/m^3$ (micrograms of particulate per cubic metre of air) at the Edmonton Northwest station and 42.2 $\mu g/m^3$ at the AADAC site based on continuous data. The CWS benchmark was also exceeded at other Edmonton monitoring stations over the same time period with maximum 24-hour $PM_{2.5}$ levels of 37.9 $\mu g/m^3$ at the Edmonton Central station and 45.6 $\mu g/m^3$ at the Edmonton East monitoring station. The CWS benchmark concentration for $PM_{2.5}$ is 30 $\mu g/m^3$ as a 24-hour concentration. $PM_{2.5}$ data from continuous samplers are presented in Table 2 and Figure 2 (page 8).

Based on $PM_{2.5}$ data collected with intermittent (every sixth day) monitors, the CWS was exceeded on two days at the Edmonton Northwest station, three days at the AADAC site, three days at the Polytubes site and two days at the Unisource site. Maximum 24-hour $PM_{2.5}$ concentrations over the monitoring period from intermittent samplers were 40.1, 43.6, 39.6, and 39.5 $\mu g/m^3$ at the Edmonton Northwest station, AADAC site, Polytubes site and

[1] *Alberta Ambient Air Quality Guidelines.* Alberta Environment. February 2000.
[2] *Canada-wide Standards for Particulate Matter (PM) and Ozone.* Canadian Council of Ministers of the Environment. Endorsed by CCME Council of Ministers, June 5-6, 2000, Quebec City.
[3] *Summary of Point of Impingement Standards, Point of Impingement Guidelines and Ambient Air Quality Criteria (AATCs).* Standards Development Branch, Ontario Ministry of the Environment. September 2001.

Unisource site, respectively. $PM_{2.5}$ data from intermittent samplers are presented in Table 2 (page 8), Figure 3 (page 9) and Table 3 (page 10).

(2) $PM_{2.5}$ concentrations were generally consistent between all four particulate monitoring sites in northwest Edmonton (Edmonton Northwest station, ADDAC site, Polytubes site and Unisource site). The average $PM_{2.5}$ concentration based on data collected by intermittent samplers from June 30, 2001 to March 3, 2002 ranged from 11.8 $\mu g/m^3$ at the Edmonton Northwest station to 13.0 $\mu g/m^3$ at the Polytubes site. The average $PM_{2.5}$ concentrations from continuous monitors at permanent monitoring stations in Edmonton from July 2001 to March 2002 ranged from 7.8 $\mu g/m^3$ at the Edmonton Central station to 11.3 $\mu g/m^3$ at the Edmonton Northwest station. The fairly uniform distribution of average $PM_{2.5}$ levels in Edmonton indicates that $PM_{2.5}$ is likely originating from multiple sources (transportation, industrial and home heating) rather than a few point sources.

(3) The stationary samplers and the MAML measured high levels of large particulates (TSP) at several locations in northwest Edmonton. The 24-hour Alberta Ambient Air Quality Guideline of 100 $\mu g/m^3$ was exceeded in half of the samples (19 of 38 samples) collected at the Polytubes site. This guideline was exceeded in one sample at the Edmonton Northwest station and three samples at the Unisource site. The 24-hour TSP guideline was not exceeded at the AADAC site. This 24-hour TSP guideline used in Alberta is the most stringent in Canada and is based on potential nuisance effects. TSP data are shown in Figure 4 (page 9) and Table 3 (page 10).

(4) TSP levels were substantially higher at the Polytubes site than at the other three monitoring stations. The average TSP concentration from June 30 to March 3 at the Polytubes site was 106 $\mu g/m^3$ compared to average concentrations of 45, 38 and 51 $\mu g/m^3$ measured at the Edmonton Northwest, AADAC and Unisource sites, respectively. Winds from the west-northwest, northwest and southeast were the most common on days when TSP levels were higher than the 24-hour guideline. The Inland Cement facility is located to the north and north-northwest of the Polytubes monitoring site. Other sources of particulates in this area include dust from local traffic on service roads near the Polytubes site, vehicle traffic on Yellowhead Trail, the municipal landfill cell that is adjacent to Inland Cement, and other small industries. High TSP levels at the Polytubes site were likely caused by windblown dust, industry emissions, and re-suspension of coarse particulate matter due to vehicles on the Yellowhead Trail. Wind directions from July to March and for times when TSP levels exceeded the 24-hour ambient guideline are shown in Figures 5 and 6 (page 11).

(5) Elemental composition concentrations were related to Ontario Ambient Air Quality Criteria. Because of the diverse industry base in Ontario, the Ontario Ministry of the Environment has developed ambient criteria levels for many of the heavy metals and other elements analyzed for in particulate matter. Concentrations of individual components of the particulate matter (TSP and $PM_{2.5}$) were well below the Ontario Ambient Air Quality Criteria. Levels of heavy metals such as arsenic, lead, mercury and cadmium were very low compared to these guidelines. The maximum 24-hour concentrations of these components in TSP samples were 0.0048, 0.0378, 0.0001 and 0.0016 $\mu g/m^3$ for arsenic, lead, mercury and cadmium, respectively, compared to the Ontario Ambient Air Quality Criteria values of 0.3, 2, 0.5 and

2 $\mu g/m^3$, respectively for these four elements. These data are presented in Table 4 (pages 12 and 13) for $PM_{2.5}$ samples and Table 5 (pages 14 and 15) for TSP samples.

(6) Ambient levels of all gaseous air pollutants measured by the MAML were below Alberta's Ambient Air Quality Guidelines. Alberta has one-hour air quality guidelines for sulphur dioxide, nitrogen dioxide, ozone, carbon monoxide, hydrogen sulphide and ammonia. These guidelines are some of the most stringent in North America. Maximum one-hour concentrations were:

- 4% of the one-hour guideline for sulphur dioxide,
- 25% of the one-hour guideline for nitrogen dioxide,
- 66% of the one-hour guideline for ozone,
- 35% of the one-hour guideline for carbon monoxide,
- 30% of the one-hour guideline for hydrogen sulphide, and
- 1% of the one-hour guideline for ammonia.

(7) The maximum one-hour sulphur dioxide concentration measured by the MAML was 0.007 parts per million (ppm). This value is well below Alberta's one-hour guideline of 0.172 ppm. The highest one-hour nitrogen dioxide concentration was 0.054 ppm and is lower than the one-hour guideline of 0.212 ppm. Carbon monoxide levels were also much lower than the air quality guideline with a maximum one-hour value of 4.5 ppm compared to the one-hour guideline of 13 ppm. Air quality and weather data collected by the MAML in northwest Edmonton are presented in Tables 6 to 11 (pages 16 to 22).

Table 1 Parameters monitored in northwest Edmonton.

Monitoring Site	Location	Sampling Period	Parameters Measured	Sampling Frequency
Edmonton Northwest station	13335-127 St.	July 1, 2001 to March 31, 2002	PM_{10}, $PM_{2.5}$, NO_2, NO, NO_X, CO, COH, O_3, THC, wind speed and direction	continuous (hourly)
		June 30, 2001 to March 3, 2002	elemental analysis of TSP	intermittent (every sixth day)
		July 6, 2001 to March 3, 2002	elemental analysis of $PM_{2.5}$	intermittent (every sixth day)
AADAC site	12325-140 St.	August 17, 2001 to March 31, 2002	$PM_{2.5}$, wind speed and direction	continuous (hourly)
		August 17, 2001 to March 3, 2002	elemental analysis of TSP and $PM_{2.5}$	intermittent (every sixth day)
Polytubes site	12160-160 St.	January 3 to March 31, 2002	wind speed and direction	continuous (hourly)
		June 30, 2001 to March 3, 2002	elemental analysis of TSP, $PM_{2.5}$ and PM_{10} (PM_{10} sampling started January 26, 2002)	intermittent (every sixth day)
Unisource site	16408-121A St.	June 30, 2001 to March 3, 2002	elemental analysis of TSP and $PM_{2.5}$ ($PM_{2.5}$ sampling starting July 12, 2001)	intermittent (every sixth day)

List of Air Quality Parameters

TSP - total suspended particulates
PM_{10} - inhalable particulates
$PM_{2.5}$ - respirable particulates
COH - dust and smoke
NO_2 - nitrogen dioxide
NO - nitric oxide
NO_X - total oxides of nitrogen
CO - carbon monoxide
O_3 - ozone
THC - total hydrocarbons

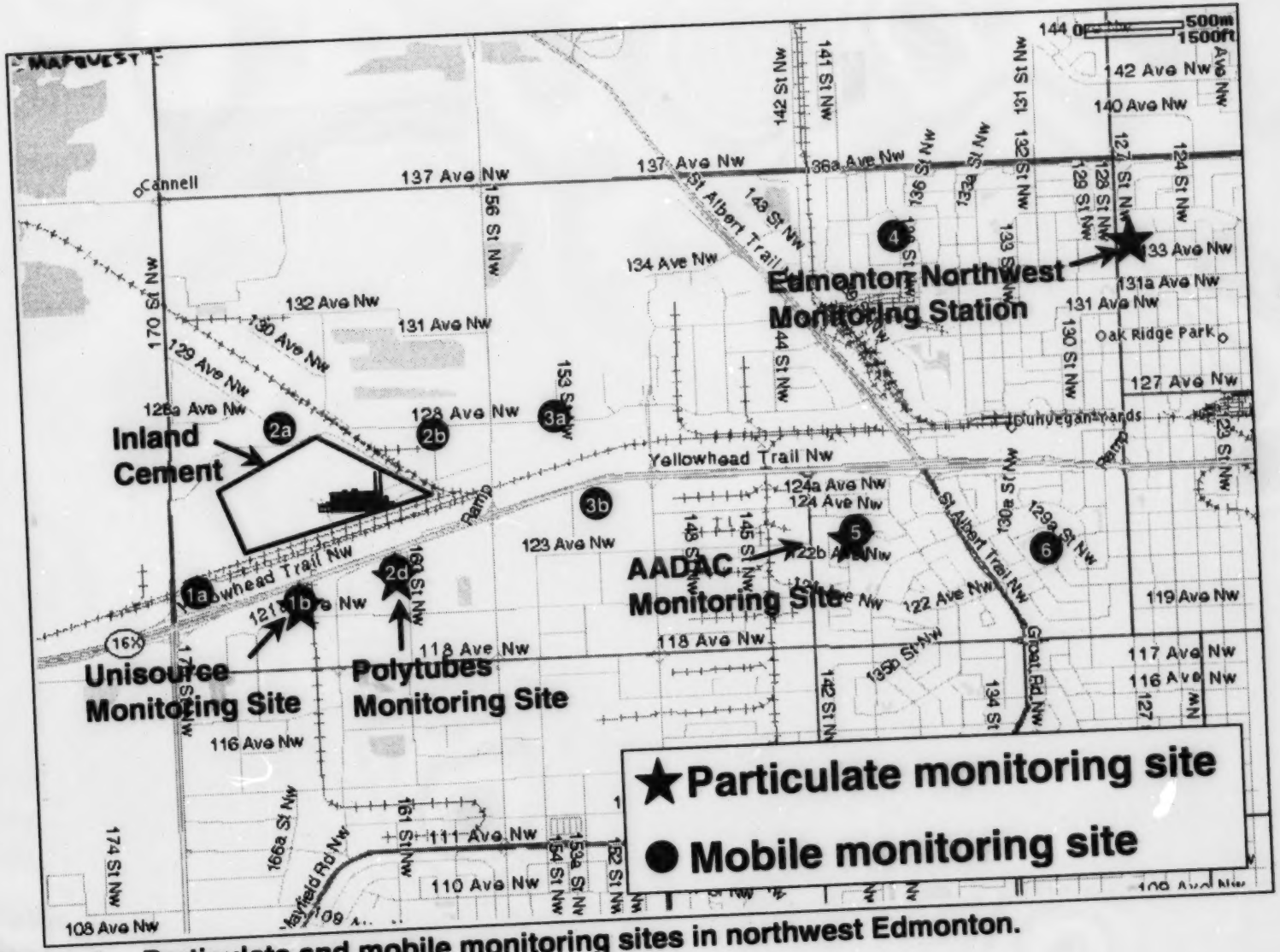

Figure 1 Particulate and mobile monitoring sites in northwest Edmonton.

Table 2 Respirable particulate ($PM_{2.5}$) concentrations from continuous and intermittent samplers located in Edmonton (July 2001 to March 2002).

Monitoring Location	Statistic	Jul-01	Aug-01	Sep-01	Oct-01	Nov-01	Dec-01	Jan-02	Feb-02	Mar-02	Jul-01 to Mar-02
Edmonton Northwest (continuous)	Average (µg/m³)	9.1	15.1	11.8	10.0	13.7	16.6	10.1	6.8	8.0	11.3
	Peak One-hour (µg/m³)	35.8	53.0	49.5	55.5	62.8	96.3	120.3	47.0	70.5	120.3
	Peak 24-hour (µg/m³)	13.8	30.4	28.3	21.4	28.3	43.2	53.1	17.7	19.1	53.1
	# Above 24-hour CWS*	0	1	0	0	0	3	1	0	0	5
Edmonton Northwest (intermittent)	Average (µg/m³)	6.3	14.5	6.5	7.4	12.4	20.1	15.2	15.8	5.5	11.8
	Peak 24-hour (µg/m³)	8.3	23.7	9.9	9.7	21.6	37.5	40.1	26.0	5.5	40.1
	# Above 24-hour CWS*	0	0	0	0	0	1	1	0	0	2
AADAC Site (continuous)	Average (µg/m³)	no data	11.7	8.4	6.8	9.2	12.3	7.9	4.5	5.9	8.2
	Peak One-hour (µg/m³)	no data	44.3	49.8	31.8	37.8	61.5	126.3	28.8	42	126.3
	Peak 24-hour (µg/m³)	no data	25.2	21.1	12.6	20.8	26.8	42.2	22.3	11.6	42.2
	# Above 24-hour CWS*	no data	0	0	0	0	0	1	0	0	1
AADAC Site (intermittent)	Average (µg/m³)	no data	10.6	6.3	6.1	11.8	21.8	16.2	13.9	5.4	12.3
	Peak 24-hour (µg/m³)	no data	12.9	10.6	8.5	22.8	37.5	43.6	21.9	5.4	43.6
	# Above 24-hour CWS*	no data	0	0	0	0	2	1	0	0	3
Polytubes Site (intermittent)	Average (µg/m³)	8.0	13.0	7.8	8.1	14.5	22.0	16.8	17.2	10.6	13.0
	Peak 24-hour (µg/m³)	10.8	21.4	13.8	11.1	26.2	39.5	39.6	28.0	10.6	39.6
	# Above 24-hour CWS*	0	0	0	0	0	2	1	0	0	3
Unisource Site (intermittent)	Average (µg/m³)	6.0	11.5	6.7	6.4	13.5	19.7	16.7	15.9	6.2	11.9
	Peak 24-hour (µg/m³)	9.5	21.4	9.5	8.3	28.6	32.6	39.5	26.8	6.2	39.5
	# Above 24-hour CWS*	0	0	0	0	0	1	1	0	0	2
Edmonton Central (continuous)	Average (µg/m³)	6.7	11.7	7.6	6.8	9.0	11.3	7.0	4.4	6.3	7.8
	Peak One-hour (µg/m³)	38.3	58.3	88.5	32.5	34.3	41.3	111.5	38.5	32.3	111.5
	Peak 24-hour (µg/m³)	9.4	26.4	18.3	12.6	18.2	27.6	37.9	11.9	12.3	37.9
	# Above 24-hour CWS*	0	0	0	0	0	0	1	0	0	1
Edmonton East (continuous)	Average (µg/m³)	10.5	12.8	7.2	7.7	9.8	12.8	9.1	5.4	6.6	9.2
	Peak One-hour (µg/m³)	63.5	80.8	48.3	44.8	48.8	80.3	123.3	30.7	47.8	123.3
	Peak 24-hour (µg/m³)	22.4	26.9	21.7	17.4	19.4	32.8	45.6	13.7	13.4	45.6
	# Above 24-hour CWS*	0	0	0	0	0	2	1	0	0	3

* The 24-hour Canada-wide Standard (CWS) benchmark concentration for $PM_{2.5}$ is 30 µg/m³. The achievement statistic for the $PM_{2.5}$ CWS is based on the 98th percentile annual value, averaged over three years.

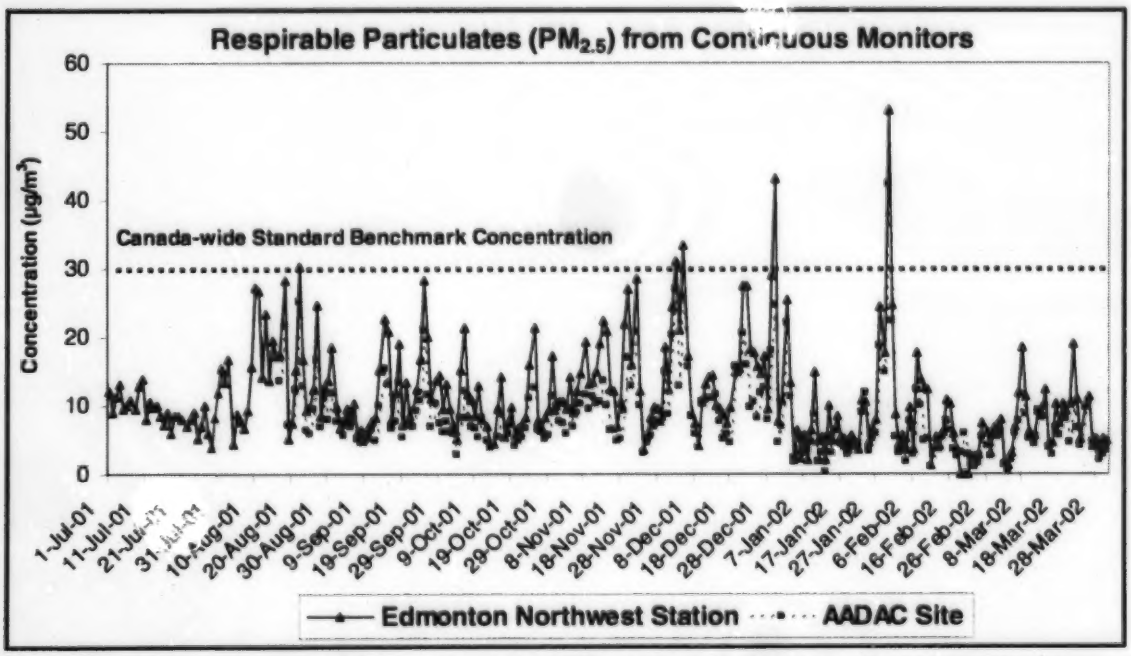

Figure 2 24-hour respirable particulate ($PM_{2.5}$) concentrations from continuous monitors in northwest Edmonton (June 30, 2001 to March 31, 2002).

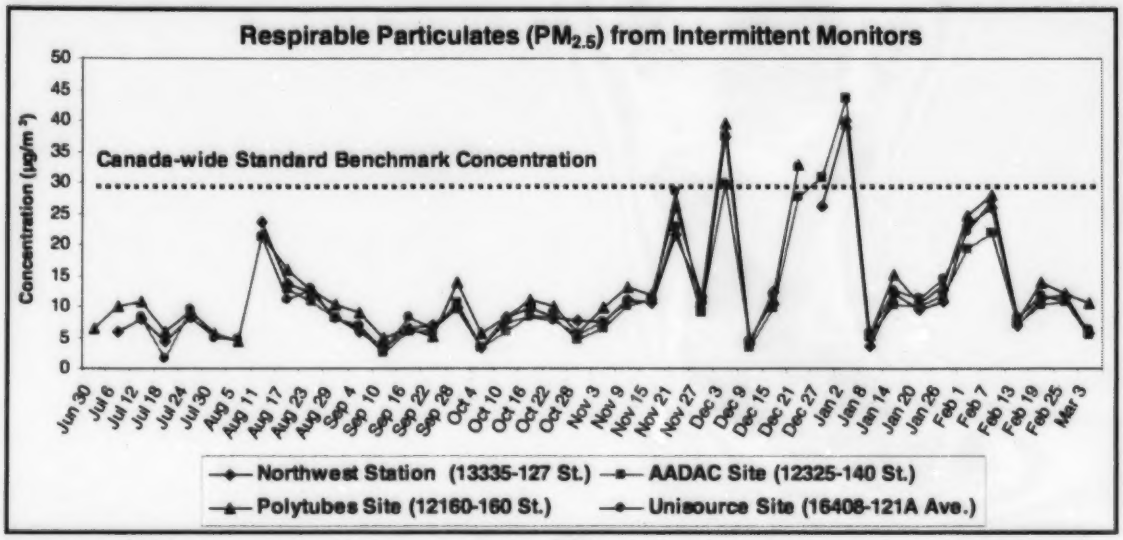
Respirable Particulates ($PM_{2.5}$) from Intermittent Monitors
Concentration (µg/m³)
Canada-wide Standard Benchmark Concentration
Northwest Station (13335-127 St.)
AADAC Site (12325-140 St.)
Polytubes Site (12160-160 St.)
Unisource Site (16408-121A Ave.)

Figure 3 24-hour respirable particulate ($PM_{2.5}$) concentrations from intermittent monitors in northwest Edmonton (June 30, 2001 to March 3, 2002).

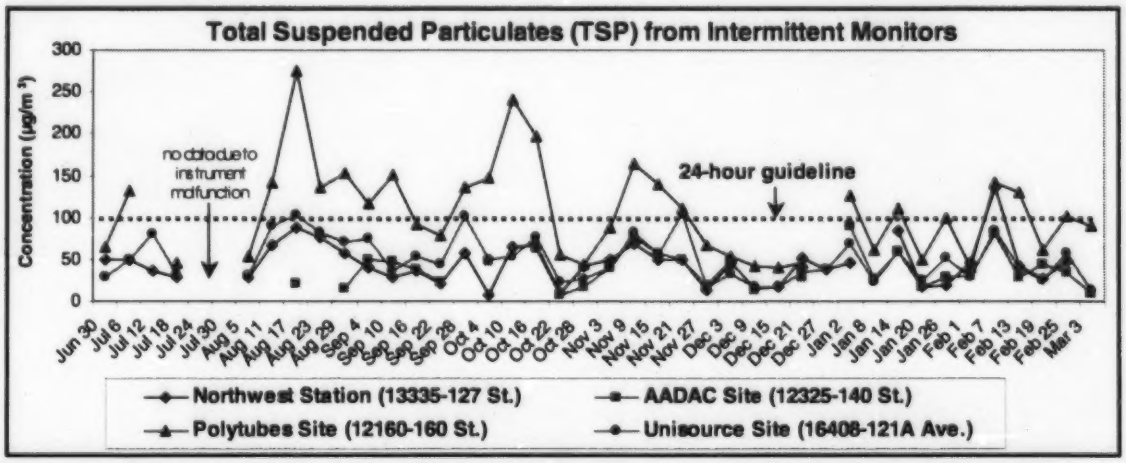
Total Suspended Particulates (TSP) from Intermittent Monitors
Concentration (µg/m³)
no data due to instrument malfunction
24-hour guideline
Northwest Station (13335-127 St.)
AADAC Site (12325-140 St.)
Polytubes Site (12160-160 St.)
Unisource Site (16408-121A Ave.)

Figure 4 24-hour total suspended particulate concentrations from intermittent monitors in northwest Edmonton (June 30, 2001 to March 3, 2002).

Table 3 24-hour $PM_{2.5}$, PM_{10} and TSP concentrations ($\mu g/m^3$) from intermittent samplers in northwest Edmonton (June 29, 2001 to March 3, 2002).

Sample Date	Northwest Station (13335-127 St.)		AADAC Site (12325-140 St.)		Polytubes Site (12160-160 St.)			Unisource Site (16408-121A Ave.)	
	$PM_{2.5}$	TSP	$PM_{2.5}$	TSP	$PM_{2.5}$	PM_{10}	TSP	$PM_{2.5}$	TSP
30-Jun-01	no data	49.1	*	**	6.5	***	65.8	*	28.7
6-Jul-01	5.8	49.3	*	**	10.1	***	***132.6***	*	49.8
12-Jul-01	7.9	35.7	*	**	10.8	***	no data	8.2	80.6
18-Jul-01	4.4	28.6	*	**	6.0	***	46.3	1.5	33.3
24-Jul-01	8.3	no data	*	**	9.3	***	no data	9.5	no data
30-Jul-01	5.1	no data	*	**	5.5	***	no data	4.8	no data
5-Aug-01	no data	27.7	*	**	4.3	***	54.0	4.7	31.0
11-Aug-01	23.7	66.7	*	**	21.4	***	***140.9***	21.4	90.5
17-Aug-01	13.6	88.3	12.9	20.3	16.0	***	***275.3***	11.0	***103.8***
23-Aug-01	12.3	76.1	10.7	no data	12.7	***	***136.6***	12.8	82.1
29-Aug-01	8.3	57.4	8.1	14.9	10.3	***	***153.8***	7.9	70.9
4-Sep-01	5.8	39.9	6.4	49.6	8.9	***	***117.5***	6.8	75.2
10-Sep-01	3.2	28.8	2.6	47.5	5.0	***	***151.7***	2.8	35.6
16-Sep-01	6.5	36.3	5.8	37.4	6.5	***	92.5	8.1	53.6
22-Sep-01	7.0	20.2	6.2	23.8	5.1	***	79.2	6.4	44.0
28-Sep-01	9.9	57.1	10.6	no data	13.8	***	***135.1***	9.5	***100.7***
4-Oct-01	3.4	7.0	3.3	48.6	5.6	***	***147.9***	3.2	49.2
10-Oct-01	8.3	64.6	5.9	no data	8.1	***	***241.0***	7.4	53.4
16-Oct-01	9.7	67.7	8.5	63.8	11.1	***	***197.2***	8.3	75.9
22-Oct-01	8.1	10.5	8.3	7.5	10.1	***	55.4	7.8	23.0
28-Oct-01	7.8	42.2	4.6	16.7	5.8	***	44.2	5.4	26.9
3-Nov-01	7.5	49.4	6.5	39.3	9.9	***	87.1	7.5	39.6
9-Nov-01	11.0	68.5	9.9	76.8	13.1	***	***165.1***	10.8	83.0
15-Nov-01	10.6	49.9	11.1	56.5	11.8	***	***138.9***	10.7	55.2
21-Nov-01	21.6	48.8	22.8	49.2	26.2	***	***110.4***	28.6	***105.8***
27-Nov-01	11.5	14.1	8.9	19.1	11.2	***	67.7	9.8	16.6
3-Dec-01	***37.5***	46.3	***37.5***	46.8	***39.5***	***	54.4	29.7	32.1
9-Dec-01	4.2	14.4	3.3	13.7	4.5	***	41.7	4.5	17.3
15-Dec-01	12.3	16.5	9.8	no data	11.1	***	39.4	11.9	16.5
21-Dec-01	no data	52.4	27.7	28.7	***32.7***	***	45.2	***32.6***	33.6
27-Dec-01	26.2	38.5	***30.7***	no data	no data	***	no data	no data	39.0
2-Jan-02	***40.1***	46.8	***43.6***	89.1	***39.6***	***	***125.2***	***39.5***	69.2
8-Jan-02	3.5	no data	5.5	26.1	5.5	***	60.8	5.7	23.5
14-Jan-02	12.1	84.5	10.4	60.1	15.1	***	***111.1***	12.6	59.8
20-Jan-02	9.6	16.8	9.9	17.0	10.6	***	49.9	11.3	24.0
26-Jan-02	10.7	19.5	11.7	28.4	13.3	32.6	99.3	14.4	50.9
1-Feb-02	23.0	45.5	19.3	31.3	24.6	28.9	39.5	22.0	28.6
7-Feb-02	26.0	***136.4***	21.9	79.6	28.0	69.1	***141.9***	26.8	84.4
13-Feb-02	6.8	41.2	7.1	28.3	7.6	31.4	***130.8***	8.1	40.8
19-Feb-02	11.4	26.7	10.3	43.5	13.8	18.0	61.7	11.8	24.3
25-Feb-02	11.7	48.2	10.7	35.1	11.9	29.2	***101.8***	10.8	56.4
3-Mar-02	5.5	no data	5.4	9.3	10.6	31.4	90.0	6.2	13.3
# of Samples	**39**	**38**	**34**	**29**	**41**	**7**	**38**	**39**	**40**
Average	**11.8**	**45.2**	**12.3**	**38.2**	**13.0**	**34.4**	**106.0**	**11.9**	**50.6**
Maximum	**40.1**	**136.4**	**43.6**	**89.1**	**39.6**	**69.1**	**275.3**	**39.5**	**105.8**
# of Exceedances	**2**	**1**	**3**	**0**	**3**	**no guideline**	**19**	**2**	**3**
Guideline or Standard**	**30**	**100**	**30**	**100**	**30**	**no guideline**	**100**	**30**	**100**

no data - Data not available due to instrument malfunction.

* - $PM_{2.5}$ sampling began on July 6 at the Edmonton Northwest station, August 17 at the AADAC site, June 30 at the Polytubes site and July 12 at the Unisource site.

** - TSP sampling began on June 30 at the Edmonton Northwest station, Polytubes site and Unisource site and on August 17 at the AADAC site.

*** - PM_{10} sampling began on January 26 at the Polytubes site.

**** - The 24-hour Canada-wide Standard (CWS) benchmark concentration for $PM_{2.5}$ is 30 $\mu g/m^3$ and the 24-hour Alberta Ambient Air Quality Guideline for TSP is 100 $\mu g/m^3$.

Data in ***bold and italics*** - indicate that the 24-hour CWS benchmark concentration for $PM_{2.5}$ or the 24-hour Alberta Ambient Air Quality Guideline for TSP was exceeded.

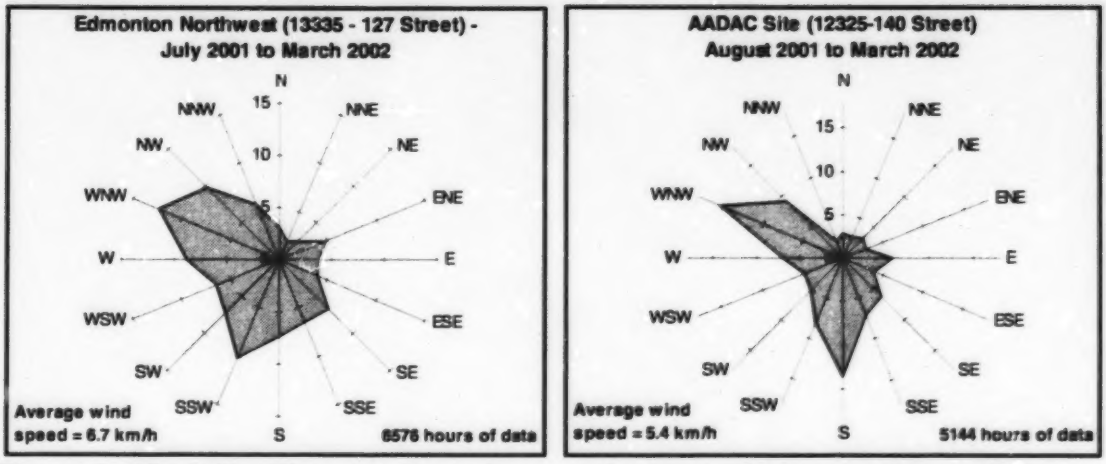

Figure 5 Wind directions for the entire monitoring period (July 2001 to March 2002) at the Edmonton Northwest and AADAC monitoring sites.

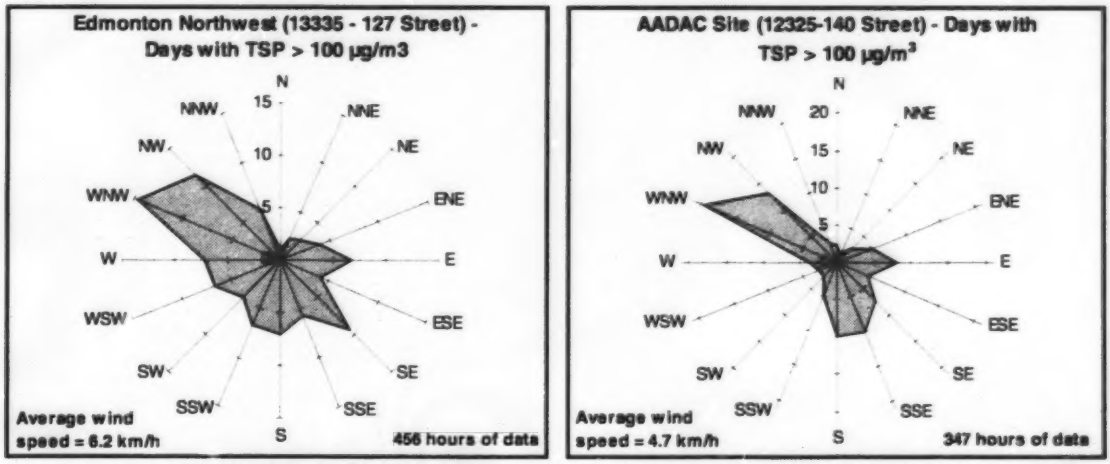

Figure 6 Wind directions on days when the 24-hour guideline for TSP was exceeded.

Table 4 Median and maximum concentrations ($\mu g/m^3$) of metals and other elements in respirable particulate ($PM_{2.5}$) samples collected in northwest Edmonton from June 29, 2001 to March 3, 2002.

Parameter	Edmonton Northwest Jul 6-Mar 3		AADAC Site Aug 17-Mar 3		Polytubes Site Jun 30-Mar 3		Unisource Site Jul 12-Mar 3		Edmonton Central* 1991-2000		Calgary Central* 1991-2000		Air Quality Guidelines or Standards**	ATSDR/EPA Priority List Ranking***
	Med.	Max.	Med.	Max.	Med.	Max.	Med.	Max.	Med.	Max.	Med.	Max.		
arsenic(As)	0.0003	0.0021	0.0004	0.0012	0.0004	0.0014	0.0004	0.0013	<0.0001	0.0030	<0.0001	0.0059	0.3	1
lead(Pb)	0.0020	0.0166	0.0020	0.0069	0.0019	0.0096	0.0014	0.0068	0.0027	0.2490	0.0020	0.0526	2	2
mercury(Hg)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0012	<0.0001	0.0015	0.5	3
cadmium(Cd)	0.0002	0.0013	0.0002	0.0006	0.0001	0.0015	0.0001	0.0005	<0.0001	0.0037	<0.0001	0.0065	2	7
phosphorus(P)	0.0075	0.0171	0.0065	0.0122	0.0101	0.0528	0.0075	0.0219	0.0157	0.2740	0.0104	0.1570		29
beryllium(Be)	<0.0001	0.0002	<0.0001	0.0002	<0.0001	0.0004	<0.0001	0.0003	element not analyzed				0.01	39
cobalt(Co)	0.0001	0.0006	0.0001	0.0006	0.0001	0.0007	0.0001	0.0006	<0.0001	0.0094	<0.0001	0.0030	0.1	49
nickel(Ni)	0.0008	0.0412	0.0009	0.0026	0.0011	0.0743	0.0009	0.0056	<0.0001	0.0045	<0.0001	0.0042	2	52
zinc(Zn)	0.0140	0.0578	0.0168	0.0591	0.0160	0.0669	0.0119	0.0599	0.0079	0.1550	0.0070	0.1480	120	70
chromium(Cr)	0.0012	0.0048	0.0012	0.0031	0.0013	0.0065	0.0011	0.0061	<0.0001	0.0096	<0.0001	0.0081	1.5	73
chloride(Cl)	0.1109	0.8998	0.1193	0.4539	0.2894	5.4042	0.1965	0.5565	0.0016	0.4980	<0.0001	4.8800	10	84
uranium(U)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	element not analyzed					92
thorium(Th)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	<0.0001	<0.0001	element not analyzed					97
barium(Ba)	0.0038	0.0114	0.0032	0.0058	0.0065	0.0537	0.0052	0.0097	0.0018	0.0207	0.0014	0.0217	10	99
bromine(Br)	0.0019	0.0043	0.0018	0.0055	0.0018	0.0165	0.0015	0.0059	0.0007	0.0070	0.0010	0.0091	20	106
copper(Cu)	0.0067	0.0967	0.0070	0.0393	0.0063	0.0959	0.0052	0.0291	0.0051	0.0491	0.0033	0.0373	50	124
manganese(Mn)	0.0077	0.0304	0.0077	0.0215	0.0092	0.0576	0.0067	0.0484	0.0086	0.0833	0.0089	0.0695	2.5	141
selenium(Se)	0.0002	0.0011	0.0003	0.0007	0.0003	0.0009	0.0002	0.0013	<0.0001	0.0010	<0.0001	0.0015	10	143
aluminum(Al)	0.0564	0.2563	0.0582	0.2283	0.0778	1.1941	0.0696	0.2551	0.0270	0.9570	0.0254	0.4720		193
vanadium(V)	0.0001	0.0012	0.0001	0.0013	0.0002	0.0028	0.0001	0.0016	<0.0001	0.0131	<0.0001	0.0070	2	200
silver(Ag)	<0.0001	0.0006	<0.0001	0.0007	<0.0001	0.0007	<0.0001	0.0007	<0.0001	0.0023	<0.0001	0.0028	1	207
antimony(Sb)	0.0003	0.0011	0.0003	0.0009	0.0003	0.0014	0.0003	0.0010	<0.0001	0.0170	<0.0001	0.0193	25	251
gold(Au)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	element not analyzed					not ranked
boron(B)	0.0027	0.0276	0.0036	0.0122	0.0028	0.0144	0.0038	0.0212	element not analyzed				120	not ranked
bismuth(Bi)	<0.0001	0.0003	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0009	<0.0001	0.0011		not ranked
calcium(Ca)	0.0937	0.3511	0.1176	0.2242	0.2577	6.3209	0.1027	0.3000	0.0403	0.8850	0.0967	2.4800		not ranked
cerium(Ce)	0.0002	0.0014	0.0002	0.0004	0.0002	0.0017	0.0002	0.0008	<0.0001	0.0174	<0.0001	0.0181		not ranked
cesium(Cs)	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0095	<0.0001	0.0102		not ranked
dysprosium(Dy)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	element not analyzed					not ranked
erbium(Er)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	element not analyzed					not ranked
europium(Eu)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	element not analyzed					not ranked
iron(Fe)	0.1083	0.3441	0.0865	0.2474	0.1298	1.7013	0.1088	0.4321	0.0451	1.3100	0.0542	0.5270	4	not ranked
# of samples	43		31		48		39		580		562			

* Particulate data for the Edmonton Central and Calgary Central stations are based on samples routinely collected as a 24-hour concentration, every sixth day according to the NAPS schedule. Edmonton Central and Calgary Central data are summarized for the months of June to November 1991 to 2000.

** Based on Ambient Air Quality Criteria from the Ontario Ministry of the Environment.

*** Agency for Toxic Substances and Disease Registry (ATSDR) and US Environmental Protection Agency (EPA) list of hazardous substances ranked in order of priority.

Table 4 (cont.) Median and maximum concentrations ($\mu g/m^3$) of metals and other elements in respirable particulate ($PM_{2.5}$) samples collected in northwest Edmonton from June 29, 2001 to March 3, 2002.

Parameter	Edmonton Northwest Jul 6-Mar 3		AADAC Site Aug 17-Mar 3		Polytubes Site Jun 30-Mar 3		Unisource Site Jul 12-Mar 3		Edmonton Central* 1991-2000		Calgary Central* 1991-2000		Air Quality Guidelines or Standards**	ATSDR/EPA Priority List Ranking***
	Med.	Max.	Med.	Max.	Med.	Max.	Med.	Max.	Med.	Max.	Med.	Max.		
gallium(Ga)	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0004	<0.0001	0.0001	<0.0001	0.0043	<0.0001	0.0173		not ranked
gadolinium(Gd)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	element not analyzed					not ranked
germanium(Ge)	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0009	<0.0001	0.0021		not ranked
holmium(Ho)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	element not analyzed					not ranked
iodine(I)	0.0003	0.0007	0.0003	0.0005	0.0003	0.0006	0.0003	0.0006	<0.0001	0.0055	<0.0001	0.0049		not ranked
indium(In)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0067	<0.0001	0.0079		not ranked
potassium(K)	0.0648	0.2876	0.0641	0.2937	0.0786	0.5008	0.0685	0.2334	0.0475	0.4360	0.0506	0.3680		not ranked
lanthanum(La)	0.0001	0.0007	0.0001	0.0003	0.0001	0.0008	0.0001	0.0004	<0.0001	0.0173	<0.0001	0.0180		not ranked
lithium(Li)	0.0001	0.0006	0.0002	0.0006	0.0002	0.0008	0.0002	0.0005	element not analyzed					not ranked
magnesium(Mg)	0.0119	0.0584	0.0138	0.0409	0.0256	0.3732	0.0136	0.0547	0.0097	0.0634	0.0183	0.2470		not ranked
molybdenum(Mo)	0.0002	0.0006	0.0003	0.0007	0.0003	0.0015	0.0002	0.0009	<0.0001	0.0098	<0.0001	0.0016	120	not ranked
sodium(Na)	0.0820	0.5703	0.0664	0.2120	0.0860	3.6298	0.0902	0.2472	<0.0001	0.7330	0.0201	3.5400		not ranked
niobium(Nb)	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0003	<0.0001	0.0002	<0.0001	0.0007	<0.0001	0.0008		not ranked
neodymium(Nd)	0.0001	0.0005	0.0001	0.0001	0.0001	0.0007	0.0001	0.0003	0.0027	0.0299	<0.0001	0.0165		not ranked
palladium(Pd)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0026	<0.0001	0.0019	10	not ranked
protactnium(Pr)	<0.0001	0.0002	<0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0001	<0.0001	0.0220	<0.0001	0.0206		not ranked
platinum(Pt)	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	element not analyzed				0.2	not ranked
rubidium(Rb)	0.0001	0.0006	0.0001	0.0005	0.0002	0.0016	0.0001	0.0003	<0.0001	0.0021	<0.0001	0.0011		not ranked
sulphur(S)	0.3114	2.3863	0.3311	2.7904	0.2798	2.2230	0.3009	2.0548	0.4255	3.4800	0.3940	2.4600		not ranked
scandium(Sc)	<0.0001	0.0002	<0.0001	0.0001	0.0001	0.0010	<0.0001	0.0002	<0.0001	0.0496	<0.0001	0.0785		not ranked
silicon(Si)	0.1856	0.8997	0.1530	0.7255	0.3249	6.2845	0.2163	0.8854	0.1030	2.2900	0.1190	1.4800	5	not ranked
samarium(Sm)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	element not analyzed					not ranked
tin(Sn)	0.0002	0.0022	0.0003	0.0013	0.0002	0.0010	0.0002	0.0009	<0.0001	0.0137	<0.0001	0.0143	10	not ranked
strontium(Sr)	0.0004	0.0010	0.0004	0.0008	0.0007	0.0082	0.0005	0.0010	<0.0001	0.0057	<0.0001	0.0056	120	not ranked
tantalum(Ta)	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0020	0.0087	0.0043	0.0093		not ranked
terbium(Tb)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	element not analyzed					not ranked
tellurium(Te)	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0155	<0.0001	0.0176	10	not ranked
titanium(Ti)	0.0039	0.0123	0.0026	0.0089	0.0044	0.0512	0.0028	0.0108	<0.0001	0.0974	<0.0001	0.0353	120	not ranked
thallium(Tl)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001	<0.0001	0.0007	<0.0001	0.0011		not ranked
tungsten(W)	0.0001	0.0018	0.0002	0.0022	0.0002	0.0027	0.0002	0.0022	<0.0001	0.0143	<0.0001	0.0162		not ranked
yttrium(Y)	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0005	<0.0001	0.0001	<0.0001	0.0006	<0.0001	0.0010		not ranked
ytterbium(Yb)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	element not analyzed					not ranked
zirconium(Zr)	0.0002	0.0047	0.0002	0.0013	0.0003	0.0024	0.0002	0.0004	<0.0001	0.0033	<0.0001	0.0038		not ranked
# of samples	43		31		48		39		580		562			

* Particulate data for the Edmonton Central and Calgary Central stations are based on samples routinely collected as a 24-hour concentration, every sixth day according to the NAPS schedule. Edmonton Central and Calgary Central data are summarized for the months of June to September 1991 to 2000.

** Based on Ambient Air Quality Criteria from the Ontario Ministry of the Environment.

*** Agency for Toxic Substances and Disease Registry (ATSDR) and US Environmental Protection Agency (EPA) list of hazardous substances ranked in order of priority.

Table 5 Median and maximum concentrations ($\mu g/m^3$) of metals and other elements in total suspended particulate (TSP) samples collected in northwest Edmonton from September 22, 2001* to March 3, 2002

Parameter	Edmonton Northwest Sep 22-Mar 3*		AADAC Site Sep 22-Mar 3*		Polytubes Site Sep 22-Mar 3*		Unisource Site Sep 22-Mar 3*		Air Quality Guidelines or Standards*	ATSDR/EPA Priority List Ranking**
	Med.	Max.	Med.	Max.	Med.	Max.	Med.	Max.		
arsenic(As)	0.0007	0.0030	0.0006	0.0030	0.0015	0.0048	0.0006	0.0021	0.3	1
lead(Pb)	0.0060	0.0219	0.0048	0.0136	0.0097	0.0378	0.0037	0.0145	2	2
mercury(Hg)	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0001	0.5	3
cadmium(Cd)	0.0002	0.0016	0.0002	0.0007	0.0002	0.0006	0.0001	0.0005	2	7
phosphorus(P)	0.0302	0.1223	0.0321	0.0928	0.0544	0.2398	0.0295	0.1264		29
beryllium(Be)	0.0001	0.0002	0.0001	0.0002	0.0001	0.0004	0.0001	0.0002	0.01	39
cobalt(Co)	0.0007	0.0019	0.0005	0.0051	0.0008	0.0041	0.0004	0.0018	0.1	49
nickel(Ni)	0.0044	0.0538	0.0027	0.2811	0.0044	0.0223	0.0024	0.0333	2	52
zinc(Zn)	0.0302	0.0920	0.0316	0.0823	0.0488	0.1137	0.0246	0.0893	120	70
chromium(Cr)	0.0032	0.0842	0.0032	0.0438	0.0052	0.0257	0.0034	0.0572	1.5	73
chloride(Cl)	0.8987	22.3350	0.6263	10.6183	1.3108	14.9116	1.3107	9.5204	10	84
uranium(U)	<0.0001	0.0002	<0.0001	0.0001	0.0001	0.0005	<0.0001	0.0002		92
thorium(Th)	0.0001	0.0005	0.0001	0.0004	0.0002	0.0011	0.0001	0.0006		97
barium(Ba)	0.0240	0.1028	0.0197	0.0604	0.0553	0.1720	0.0233	0.0973	10	99
bromine(Br)	0.0027	0.0083	0.0025	0.0064	0.0027	0.0082	0.0016	0.0046	20	106
copper(Cu)	0.0934	0.4394	0.0689	0.2295	0.2964	0.5645	0.0358	0.1044	50	124
manganese(Mn)	0.0255	0.1252	0.0278	0.0885	0.0453	0.3852	0.0245	0.1246	2.5	141
selenium(Se)	0.0003	0.0010	0.0002	0.0011	0.0004	0.0017	0.0002	0.0011	10	143
aluminum(Al)	0.7071	3.0321	0.6843	2.4135	2.0291	9.6377	0.8511	4.1835		193
vanadium(V)	0.0012	0.0059	0.0013	0.0062	0.0031	0.0143	0.0015	0.0074	2	200
silver(Ag)	0.0001	0.0006	<0.0001	0.0007	0.0002	0.0005	<0.0001	0.0014	1	207
antimony(Sb)	0.0009	0.0028	0.0007	0.0019	0.0010	0.0020	0.0005	0.0016	25	251
gold(Au)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001		not ranked
boron(B)	0.0039	0.0220	0.0049	0.0204	0.0061	0.0269	0.0032	0.0147	120	not ranked
bismuth(Bi)	<0.0001	0.0002	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0001		not ranked
calcium(Ca)	1.0024	3.9708	1.5061	3.7166	6.6819	33.2008	1.7372	6.4610		not ranked
cerium(Ce)	0.0009	0.0041	0.0008	0.0029	0.0023	0.0078	0.0009	0.0045		not ranked
cesium(Cs)	<0.0001	0.0002	0.0001	0.0002	0.0002	0.0005	0.0001	0.0003		not ranked
dysprosium(Dy)	<0.0001	0.0002	<0.0001	0.0001	0.0001	0.0006	0.0001	0.0002		not ranked
erbium(Er)	<0.0001	0.0001	<0.0001	0.0001	0.0001	0.0003	<0.0001	0.0001		not ranked
europium(Eu)	<0.0001	0.0001	<0.0001	0.0001	<0.0001	0.0002	<0.0001	0.0001		not ranked
iron(Fe)	0.8248	3.9504	0.7173	2.5646	1.8815	7.0734	0.8782	3.4737	4	not ranked
# of samples	29		26		27		28			

* TSP samples before Sept 22 were collected using Pallflex filters which are not suitable for metal analysis. TSP samples as of Sept 22 were collected using Zeflour filt

** Based on Ambient Air Quality Criteria from the Ontario Ministry of the Environment.

*** Agency for Toxic Substances and Disease Registry (ATSDR) and US Environmental Protection Agency (EPA) list of hazardous substances ranked in order of prior

Table 5 (cont.) Median and maximum concentrations (μg/m³) of metals and other elements in total suspended particulate (TSP) samples collected in northwest Edmonton from September 22, 2001* to March 3, 2002.

Parameter	Edmonton Northwest Sep 22-Mar 3*		AADAC Site Sep 22-Mar 3*		Polytubes Site Sep 22-Mar 3*		Unisource Site Sep 22-Mar 3*		Air Quality Guidelines or Standards**	ATSDR/EPA Priority List Ranking***
	Med.	Max.	Med.	Max.	Med.	Max.	Med.	Max.		
gallium(Ga)	<0.0001	0.0010	<0.0001	0.0006	<0.0001	0.0009	<0.0001	0.0007		not ranked
gadolinium(Gd)	0.0001	0.0002	0.0001	0.0002	0.0001	0.0006	0.0001	0.0003		not ranked
germanium(Ge)	<0.0001	0.0002	0.0001	0.0001	0.0001	0.0003	<0.0001	0.0003		not ranked
holmium(Ho)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001		not ranked
iodine(I)	0.0002	0.0006	0.0002	0.0006	0.0002	0.0007	0.0001	0.0015		not ranked
indium(In)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	<0.0001		not ranked
potassium(K)	0.3049	1.1977	0.2617	0.8335	0.5897	4.1871	0.3037	1.1193		not ranked
lanthanum(La)	0.0005	0.0019	0.0004	0.0016	0.0011	0.0040	0.0005	0.0022		not ranked
lithium(Li)	0.0004	0.0015	0.0004	0.0012	0.0010	0.0041	0.0005	0.0023		not ranked
magnesium(Mg)	0.1785	0.8353	0.1640	0.5706	0.6854	1.9878	0.2205	0.8916		not ranked
molybdenum(Mo)	0.0008	0.0097	0.0007	0.0050	0.0010	0.0035	0.0005	0.0060	120	not ranked
sodium(Na)	1.4815	12.4654	1.0065	6.9327	1.2171	9.2955	1.3402	6.4371		not ranked
niobium(Nb)	0.0002	0.0007	0.0001	0.0006	0.0004	0.0011	0.0002	0.0013		not ranked
neodymium(Nd)	0.0004	0.0016	0.0003	0.0012	0.0010	0.0038	0.0004	0.0019		not ranked
palladium(Pd)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	10	not ranked
protactnium(Pr)	0.0001	0.0004	0.0001	0.0003	0.0002	0.0009	0.0001	0.0005		not ranked
platinum(Pt)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.2	not ranked
rubidium(Rb)	0.0010	0.0046	0.0010	0.0032	0.0026	0.0111	0.0011	0.0050		not ranked
sulphur(S)	0.3548	1.2571	0.4166	2.8172	0.3949	1.9122	0.1452	0.8166		not ranked
scandium(Sc)	0.0007	0.0019	0.0005	0.0014	0.0013	0.0037	0.0006	0.0025		not ranked
silicon(Si)	4.9064	22.4936	2.8373	15.0648	12.4735	54.5731	5.0898	23.1511	5	not ranked
samarium(Sm)	0.0001	0.0003	0.0001	0.0002	0.0002	0.0007	0.0001	0.0004		not ranked
tin(Sn)	0.0040	0.0416	0.0022	0.0265	0.0030	0.0265	0.0030	0.0161	10	not ranked
strontium(Sr)	0.0035	0.0165	0.0039	0.0099	0.0149	0.0428	0.0046	0.0191	120	not ranked
tantalum(Ta)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001		not ranked
terbium(Tb)	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.0001	<0.0001	<0.0001		not ranked
tellurium(Te)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0002	10	not ranked
titanium(Ti)	0.0294	0.1088	0.0241	0.0888	0.0774	0.2667	0.0320	0.1466	120	not ranked
thallium(Tl)	<0.0001	0.0001	<0.0001	0.0001	0.0001	0.0004	<0.0001	0.0002		not ranked
tungsten(W)	0.0008	0.0119	0.0013	0.0238	0.0012	0.0193	0.0008	0.0088		not ranked
yttrium(Y)	0.0002	0.0011	0.0002	0.0022	0.0007	0.0026	0.0003	0.0013		not ranked
ytterbium(Yb)	<0.0001	0.0001	<0.0001	0.0001	0.0001	0.0003	<0.0001	0.0001		not ranked
zirconium(Zr)	0.0012	0.0059	0.0012	0.0039	0.0035	0.0103	0.0015	0.0062		not ranked
# of samples	29		26		27		28			

* TSP samples before Sept 22 were collected using Pallflex filters which are not suitable for metal analysis. TSP samples as of Sept 22 were collected using Zefluor filt

** Based on Ambient Air Quality Criteria from the Ontario Ministry of the Environment.

*** Agency for Toxic Substances and Disease Registry (ATSDR) and US Environmental Protection Agency (EPA) list of hazardous substances ranked in order of prior

Table 6 Overall average air pollutant concentrations in northwest Edmonton based on data collected by the Alberta Environment *Mobile Air Monitoring Laboratory* (MAML).

Overall Average Air Quality Parameter Concentrations at Edmonton Monitoring Locations (June 2001)																
Monitoring Location	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO ppm	NO_2 ppm	NO_x ppm	NH_3 ppm	TRS ppm	H_2S ppm	PAH ng/m^3	TSP $\mu g/m^3$	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$
Mobile Survey of Northwest Edmonton	0.4	0.025	2.2	2.0	0.2	0.001	0.016	0.012	0.028	0.004	0.001	0.000	20	82	49	5
Edmonton Northwest Station	0.4	0.029	2.1	not monitored			0.010	0.012	0.023	not monitored					20	11
Edmonton Central Station	0.5	0.024	1.8	not monitored			0.017	0.022	0.039	not monitored						7
Edmonton East Station	0.3	0.032	2.1	not monitored		0.006	0.011	0.017	0.028	not monitored		0.000	not monitored			15

Overall Average Air Quality Parameter Concentrations at Edmonton Monitoring Locations (November 2001)																
Monitoring Location	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO ppm	NO_2 ppm	NO_x ppm	NH_3 ppm	TRS ppm	H_2S ppm	PAH ng/m^3	TSP $\mu g/m^3$	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$
Mobile Survey of Northwest Edmonton	1.3	0.003	3.1	2.8	0.3	0.002	0.110	0.027	0.137	0.003	0.001	0.001	46	140	88	14
Edmonton Northwest Station	1.8	0.002	2.6	not monitored			0.118	0.029	0.147	not monitored					53	25
Edmonton Central Station	1.4	0.003	2.6	not monitored			0.080	0.029	0.109	not monitored						15
Edmonton East Station	0.8	0.002	2.7	not monitored		0.003	0.075	0.028	0.103	not monitored		0.001	not monitored			20

Overall Average Air Quality Parameter Concentrations at Edmonton Monitoring Locations (January and February 2002)																
Monitoring Location	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO ppm	NO_2 ppm	NO_x ppm	NH_3 ppm	TRS ppm	H_2S ppm	PAH ng/m^3	TSP $\mu g/m^3$	PM_{10} $\mu g/m^3$	$PM_{2.5}$ $\mu g/m^3$
Mobile Survey of Northwest Edmonton	0.8	0.009	2.6	2.5	0.2	0.002	0.049	0.025	0.074	0.003	0.000	0.000	30	72	47	7
Edmonton Northwest Station	1.1	0.009	2.3	not monitored			0.063	0.035	0.099	not monitored					26	11
Edmonton Central Station	1.0	0.009	2.2	not monitored			0.031	0.032	0.063	not monitored						5
Edmonton East Station	0.6	0.017	2.2	not monitored		0.003	0.034	0.027	0.061	not monitored		0.001	not monitored			7

List of Air Quality Parameters

CO - carbon monoxide
O_3 - ozone
THC - total hydrocarbons
CH_4 - methane
RHC - reactive hydrocarbons
SO_2 - sulphur dioxide
NO - nitric oxide
NO_2 - nitrogen dioxide
NO_X - total oxides of nitrogen
NH_3 - ammonia
TRS - total reduced sulphur
H_2S - hydrogen sulphide
PAH - polycyclic aromatic hydrocarbons
TSP - total suspended particulates
PM_{10} - inhalable particulates
$PM_{2.5}$ - respirable particulates

Table 7 Maximum one-hour air pollutant concentrations in northwest Edmonton based on data collected by the Alberta Environment *Mobile Air Monitoring Laboratory* (MAML).

Overall Maximum Air Quality Parameter Concentrations at Edmonton Monitoring Locations (June 2001)																
Monitoring Location	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO ppm	NO_2 ppm	NO_x ppm	NH_3 ppm	TRS ppm	H_2S ppm	PAH ng/m³	TSP µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³
Mobile Survey of Northwest Edmonton	2.2	0.054	3.4	3.3	0.7	0.004	0.129	0.038	0.159	0.012	0.002	0.001	191	288	176	18
Edmonton Northwest Station	1.2	0.055	4.5	not monitored			0.030	0.025	0.053	not monitored					39	16
Edmonton Central Station	0.8	0.054	2.1	not monitored			0.041	0.041	0.082	not monitored						16
Edmonton East Station	0.5	0.065	2.9	not monitored		0.031	0.035	0.038	0.065	not monitored		0.001	not monitored			46
One-hour guideline	**13.0**	**0.082**	**n/a**	**n/a**	**n/a**	**0.172**	**n/a**	**0.212**	**n/a**	**2.0**	**n/a**	**0.010**	**n/a**	**n/a**	**n/a**	**n/a**

Overall Maximum Air Quality Parameter Concentrations at Edmonton Monitoring Locations (November 2001)																
Monitoring Location	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO ppm	NO_2 ppm	NO_x ppm	NH_3 ppm	TRS ppm	H_2S ppm	PAH ng/m³	TSP µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³
Mobile Survey of Northwest Edmonton	3.4	0.012	16.4	1.9	2.5	0.007	0.335	0.054	0.389	0.018	0.003	0.003	169	930	538	58
Edmonton Northwest Station	8.0	0.013	4.1	not monitored			0.527	0.063	0.590	not monitored					119	63
Edmonton Central Station	3.5	0.006	4.0	not monitored			0.265	0.052	0.301	not monitored						34
Edmonton East Station	2.1	0.009	3.5	not monitored		0.009	0.203	0.047	0.250	not monitored		0.002	not monitored			43
One-hour guideline	**13.0**	**0.082**	**n/a**	**n/a**	**n/a**	**0.172**	**n/a**	**0.212**	**n/a**	**2.0**	**n/a**	**0.010**	**n/a**	**n/a**	**n/a**	**n/a**

Overall Maximum Air Quality Parameter Concentrations at Edmonton Monitoring Locations (January and February 2002)																
Monitoring Location	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO ppm	NO_2 ppm	NO_x ppm	NH_3 ppm	TRS ppm	H_2S ppm	PAH ng/m³	TSP µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³
Mobile Survey of Northwest Edmonton	4.5	0.023	6.5	6.0	1.2	0.006	0.208	0.047	0.254	0.014	0.002	0.002	171	256	172	26
Edmonton Northwest Station	3.7	0.032	3.4	not monitored			0.260	0.059	0.319	not monitored					82	28
Edmonton Central Station	2.9	0.033	2.6	not monitored			0.102	0.051	0.149	not monitored						22
Edmonton East Station	1.8	0.041	3.2	not monitored		0.009	0.120	0.050	0.166	not monitored		0.001	not monitored			20
One-hour guideline	**13.0**	**0.082**	**n/a**	**n/a**	**n/a**	**0.172**	**n/a**	**0.212**	**n/a**	**2.0**	**n/a**	**0.010**	**n/a**	**n/a**	**n/a**	**n/a**

List of Air Quality Parameters

CO - carbon monoxide
O_3 - ozone
THC - total hydrocarbons
CH_4 - methane
RHC - reactive hydrocarbons
SO_2 - sulphur dioxide
NO - nitric oxide
NO_2 - nitrogen dioxide
NO_X - total oxides of nitrogen
NH_3 - ammonia
TRS - total reduced sulphur
H_2S - hydrogen sulphide
PAH - polycyclic aromatic hydrocarbons
TSP - total suspended particulates
PM_{10} - inhalable particulates
$PM_{2.5}$ - respirable particulates

Table 8 One-hour average air quality parameter concentrations at each MAML monitoring site in northwest Edmonton in June 2001.

Date	Site #	Monitoring Time (M.S.T.)	CO	O_3	THC	CH_4	RHC	SO_2	NO	NO_2	NO_x	NH_3	TRS	H_2S	PAH	TSP	PM_{10}	$PM_{2.5}$
			ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ng/m³	µg/m³	µg/m³	µg/m³
18-Jun-01	Site #3B	6:17 a.m. to 7:16 a.m.	1.3	0.005	2.5	2.0	0.5	0.003	0.129	0.038	0.159	0.011	0.001	0.001	191	83	51	7
	Site #5	7:26 a.m. to 8:25 a.m.	0.4	0.009	2.1	1.9	0.3	0.002	0.024	0.018	0.042	0.003	0.001	0.001	14	42	25	4
	Site #6	8:31 a.m. to 9:31 a.m.	0.3	0.013	2.1	1.8	0.2	0.001	0.015	0.011	0.026	0.004	0.001	0.000	5	26	16	2
	Site #4	9:45 a.m. to 10:44 a.m.	0.3	0.022	2.0	1.8	0.2	0.001	0.003	0.007	0.010	0.003	0.001	0.000	5	46	26	3
	Site #2D	11:05 a.m. to 12:04 p.m.	0.4	0.021	2.1	1.9	0.3	0.001	0.034	0.012	0.043	0.005	0.001	0.000	28	84	53	6
	Site #1B	12:15 p.m. to 1:15 p.m.	0.4	0.028	2.4	1.6	0.7	0.000	0.008	0.007	0.014	0.004	0.001	0.000	11	82	49	5
	Site #3B	1:22 p.m. to 2:23 p.m.	0.5	0.026	2.1	1.8	0.3	0.000	0.023	0.011	0.032	0.006	0.001	0.000	33	162	96	9
	Site #5	2:32 p.m. to 3:31 p.m.	0.4	0.030	2.0	1.8	0.2	0.000	0.008	0.007	0.011	0.007	0.001	0.000	9	36	21	2
	Site #6	3:37 p.m. to 4:37 p.m.	0.6	0.029	2.0	1.8	0.3	0.000	0.007	0.013	0.018	0.004	0.001	0.001	4	28	16	2
	Site #4	4:48 p.m. to 5:48 p.m.	0.7	0.024	2.0	1.9	0.2	0.000	0.006	0.012	0.016	0.004	0.001	0.001	4	14	9	2
	Site #2D	6:00 p.m. to 7:00 p.m.	0.7	0.016	2.3	2.1	0.2	0.000	0.032	0.023	0.054	0.004	0.001	0.001	35	50	33	5
	Site #1B	7:04 p.m. to 8:04 p.m.	0.6	0.017	2.3	2.3	0.2	0.000	0.024	0.016	0.038	0.005	0.002	0.001	18	38	24	4
19-Jun-01	Site #2B	5:31 a.m. to 6:35 a.m.	0.6	0.007	3.4	3.3	0.3	0.000	0.024	0.016	0.041	0.000	0.000	0.001	19	81	47	5
	Site #3B	6:49 a.m. to 7:48 a.m.	0.6	0.007	2.4	2.3	0.2	0.000	0.041	0.019	0.059	0.003	0.000	0.001	47	93	59	8
	Site #4	8:07 a.m. to 9:06 a.m.	0.5	0.014	2.2	2.2	0.1	0.000	0.006	0.006	0.013	0.001	0.000	0.000	6	17	11	2
	Site #6	9:30 a.m. to 10:30 a.m.	0.6	0.017	2.3	2.1	0.2	0.001	0.008	0.007	0.016	0.003	0.000	0.000	7	43	25	3
	Site #5	10:38 a.m. to 11:37 a.m.	0.6	0.021	2.2	2.0	0.2	0.001	0.004	0.005	0.011	0.001	0.000	0.001	9	43	26	3
	Site #1B	11:50 a.m. to 12:49 p.m.	0.5	0.027	2.1	2.0	0.2	0.001	0.006	0.004	0.010	0.002	0.001	0.000	7	51	31	4
	Site #2D	12:52 p.m. to 1:53 p.m.	2.2	0.018	2.3	2.1	0.3	0.002	0.050	0.022	0.071	0.010	0.001	0.001	55	203	115	11
	Site #3B	1:59 p.m. to 3:13 p.m.	0.6	0.026	2.1	1.9	0.2	0.000	0.020	0.010	0.031	0.002	0.001	0.001	34	74	44	5
	Site #4	3:26 p.m. to 4:28 p.m.	0.3	0.035	2.0	1.8	0.2	0.000	0.000	0.003	0.005	0.002	0.001	0.000	2	23	13	2
	Site #6	4:38 p.m. to 5:37 p.m.	0.5	0.033	2.1	1.9	0.2	0.000	0.003	0.005	0.009	0.001	0.001	0.001	2	20	12	2
	Site #5	5:43 p.m. to 6:45 p.m.	0.6	0.028	2.1	1.9	0.2	0.001	0.001	0.010	0.014	0.001	0.001	0.000	4	23	15	2
	Site #1B	6:54 p.m. to 7:54 p.m.	0.4	0.015	2.4	2.0	0.5	0.000	0.008	0.022	0.032	0.000	0.001	0.000	16	39	25	3
21-Jun-01	Site #6	6:02 a.m. to 7:01 a.m.	0.5	0.011	2.3	2.1	0.1	0.001	0.017	0.019	0.038	0.001	0.000	0.001	15	74	48	6
	Site #5	7:06 a.m. to 8:06 a.m.	0.3	0.021	2.2	2.0	0.1	0.000	0.008	0.011	0.020	0.004	0.000	0.000	9	93	57	6
	Site #1B	8:16 a.m. to 9:16 a.m.	0.2	0.018	2.3	2.1	0.1	0.001	0.022	0.018	0.040	0.010	0.000	0.000	24	190	116	12
	Site #2B	9:20 a.m. to 10:20 a.m.	0.3	0.020	2.3	2.1	0.1	0.001	0.035	0.016	0.053	0.011	0.000	0.001	43	156	94	10
	Site #3B	10:27 a.m. to 11:26 a.m.	0.2	0.029	2.2	2.0	0.1	0.001	0.016	0.009	0.027	0.005	0.000	0.000	29	88	51	5
	Site #4	11:37 a.m. to 12:37 p.m.	0.1	0.041	2.1	1.9	0.1	0.000	0.001	0.001	0.002	0.004	0.000	0.000	1	41	24	3
	Site #6	12:56 p.m. to 1:56 p.m.	0.3	0.045	1.9	1.7	0.1	0.001	0.001	0.005	0.006	0.003	0.000	0.000	1	40	25	3
	Site #5	2:02 p.m. to 3:02 p.m.	0.5	0.050	1.9	1.7	0.1	0.002	0.000	0.004	0.006	0.001	0.001	0.000	1	54	33	4
	Site #2D	3:21 p.m. to 4:21 p.m.	0.7	0.030	2.4	2.1	0.4	0.004	0.033	0.028	0.060	0.006	0.001	0.000	39	232	137	14
	Site #3B	4:30 p.m. to 5:30 p.m.	0.4	0.044	1.9	1.8	0.1	0.002	0.010	0.020	0.030	0.003	0.000	0.000	24	107	64	6
	Site #1B	5:37 p.m. to 6:36 p.m.	0.3	0.054	1.9	1.8	0.1	0.001	0.001	0.007	0.010	0.001	0.000	0.000	6	79	48	6
	Site #4	6:48 p.m. to 7:48 p.m.	0.2	0.052	1.9	1.8	0.1	0.000	0.000	0.007	0.007	0.001	0.000	0.000	1	53	32	3
22-Jun-01	Site #5	5:56 a.m. to 6:55 a.m.	0.4	0.016	2.2	2.0	0.2	0.000	0.006	0.014	0.022	0.008	0.000	0.001	11	76	42	5
	Site #1B	7:06 a.m. to 8:05 a.m.	0.2	0.018	2.1	1.9	0.2	0.001	0.021	0.019	0.040	0.006	0.000	0.001	36	279	163	17
	Site #3B	8:13 a.m. to 9:13 a.m.	0.2	0.019	2.2	2.1	0.2	0.001	0.027	0.014	0.042	0.003	0.000	0.001	41	241	147	14
	Site #2B	9:23 a.m. to 10:22 a.m.	0.1	0.020	2.4	2.2	0.3	0.001	0.036	0.016	0.050	0.012	0.000	0.001	37	288	176	18
	Site #4	10:43 a.m. to 11:43 a.m.	0.1	0.030	1.9	1.7	0.2	0.001	0.001	0.003	0.002	0.000	0.001	0.000	2	28	17	2
	Site #6	11:53 a.m. to 12:51 p.m.	0.1	0.033	1.9	1.7	0.2	0.001	0.000	0.003	0.002	0.000	0.001	0.000	2	28	17	2
	Site #5	1:00 p.m. to 1:59 p.m.	0.2	0.028	1.9	1.7	0.3	0.001	0.001	0.005	0.007	0.000	0.001	0.000	7	98	55	6
	Site #3A	2:18 p.m. to 3:21 p.m.	0.7	0.023	2.4	2.2	0.3	0.001	0.022	0.017	0.039	0.005	0.001	0.001	30	110	61	7
	Site #2B	3:43 p.m. to 4:41 p.m.	0.3	0.030	1.9	1.7	0.2	0.001	0.006	0.006	0.011	0.003	0.002	0.000	13	101	57	6
	Site #3B	4:48 p.m. to 5:47 p.m.	0.3	0.027	1.9	1.7	0.2	0.001	0.015	0.007	0.022	0.003	0.001	0.000	17	45	29	4
	Site #4	5:58 p.m. to 6:57 p.m.	0.1	0.029	1.9	1.7	0.1	0.000	0.002	0.003	0.005	0.000	0.000	0.000	1	24	14	2
	Site #6	7:07 p.m. to 8:06 p.m.	0.2	0.028	2.0	1.9	0.2	0.001	0.001	0.005	0.006	0.000	0.000	0.000	4	29	18	2
One-hour guideline			**13.0**	**0.082**	**n/a**	**n/a**	**n/a**	**0.172**	**n/a**	**0.212**	**n/a**	**2.0**	**n/a**	**0.010**	**n/a**	**n/a**	**n/a**	**n/a**

no data Indicates that analyzer was not operational for indicated time period. n/a No one hour guideline.

Site #1A North side of Yellowhead Trail 300 m east of 170 St.
Site #1B Unisource - 121A Ave. and 165 St.
Site #2A Mistatim Industrial - 129 Ave. and 165 St.
Site #2B Mistatim Industrial - 128 Ave. and 160 St.
Site #2D Polytubes - 123 Ave. and 160 St.
Site #3A Brown Industrial - 153 St. and 128 Ave.
Site #3B Yellowhead ABS Casino - south side of Yellowhead Trail and 152 St.
Site #4 Wellington Park - 135 Ave. and 137 St.
Site #5 Dovercourt - 123 Ave. and 140 St. (AADAC Bldg.)
Site #6 Sherbrooke Park - 122A and 131 St.

List of Air Quality Parameters

CO - carbon monoxide
O_3 - ozone
THC - total hydrocarbons
CH_4 - methane
RHC - reactive hydrocarbons
SO_2 - sulphur dioxide
NO - nitric oxide
NO_2 - nitrogen dioxide
NO_x - total oxides of nitrogen
NH_3 - ammonia
TRS - total reduced sulphur
H_2S - hydrogen sulphide
PAH - polycyclic aromatic hydrocarbons
TSP - total suspended particulates
PM_{10} - inhalable particulates
$PM_{2.5}$ - respirable particulates

Table 9 One-hour average air quality parameter concentrations at each MAML monitoring site in northwest Edmonton in November 2001.

Date	Site #	Monitoring Time (M.S.T.)	CO ppm	O_3 ppm	THC ppm	CH_4 ppm	RHC ppm	SO_2 ppm	NO ppm	NO_2 ppm	NO_x ppm	NH_3 ppm	TRS ppm	H_2S ppm	PAH ng/m³	TSP µg/m³	PM_{10} µg/m³	$PM_{2.5}$ µg/m³
14-Nov-01	Site #6	6:06 a.m. to 7:08 a.m.	1.1	0.001	2.5	2.4	0.1	0.002	0.064	0.023	0.086	0.001	0.000	0.001	35	28	20	3
	Site #3B	7:28 a.m. to 8:28 a.m.	1.6	0.002	3.0	2.9	0.2	0.004	0.217	0.040	0.256	0.005	0.000	0.002	107	230	135	13
	Site #3A	8:42 a.m. to 9:42 a.m.	0.8	0.002	3.2	3.2	0.1	0.003	0.114	0.034	0.145	0.009	0.000	0.000	91	257	146	13
	Site #2B	9:48 a.m. to 10:48 a.m.	0.6	0.004	2.9	2.8	0.1	0.002	0.048	0.028	0.075	0.002	0.000	0.000	33	316	161	13
	Site #4	10:55 a.m. to 11:56 a.m.	0.5	0.007	2.1	2.1	0.0	0.002	0.028	0.023	0.051	0.001	0.000	0.000	26	88	52	5
	Site #5	12:17 p.m. to 1:18 p.m.	1.1	0.006	2.3	2.3	0.0	0.002	0.059	0.029	0.088	0.002	0.000	0.000	25	98	59	7
	Site #6	1:23 p.m. to 2:23 p.m.	0.6	0.010	2.1	2.1	0.0	0.002	0.019	0.020	0.039	0.002	0.000	0.000	9	32	20	3
	Site #5	2:28 p.m. to 3:28 p.m.	0.8	0.006	2.2	2.2	0.0	0.002	0.027	0.026	0.053	0.003	0.000	0.000	15	66	37	4
	Site #3A	3:36 p.m. to 4:37 p.m.	1.5	0.004	2.4	2.2	0.2	0.004	0.117	0.038	0.156	0.005	0.001	0.001	65	392	221	19
	Site #2B	4:40 p.m. to 5:39 p.m.	2.8	0.005	2.9	2.1	0.7	0.006	0.223	0.042	0.266	0.002	0.002	0.002	110	389	244	30
	Site #2A	5:47 p.m. to 6:48 p.m.	1.5	0.003	16.4	13.9	2.5	0.006	0.128	0.036	0.166	0.002	0.001	0.001	72	135	91	11
	Site #4	7:23 p.m. to 8:23 p.m.	3.1	0.006	3.1	2.4	0.7	0.003	0.229	0.030	0.261	0.004	0.002	0.002	80	107	76	14
19-Nov-01	Site #4	6:39 a.m. to 7:39 a.m.	0.7	0.001	2.4	2.3	0.0	0.001	0.030	0.023	0.053	0.000	0.000	0.000	18	40	28	5
	Site #3A	7:51 a.m. to 8:52 a.m.	1.0	0.003	2.5	2.5	0.0	0.003	0.103	0.030	0.133	0.001	0.003	0.001	44	138	90	11
	Site #2B	8:55 a.m. to 9:55 a.m.	0.7	0.002	3.0	3.2	0.0	0.002	0.070	0.023	0.094	0.001	0.001	0.000	39	205	133	16
	Site #3B	10:01 a.m. to 11:01 a.m.	0.9	0.002	2.7	2.7	0.0	0.002	0.081	0.025	0.107	0.000	0.001	0.001	32	185	116	14
	Site #5	11:17 a.m. to 12:08 p.m.	1.0	0.003	3.1	2.7	0.3	0.002	0.062	0.026	0.090	0.000	0.000	0.000	22	141	87	10
	Site #6	12:13 p.m. to 1:14 p.m.	1.0	0.003	3.1	2.7	0.5	0.003	0.057	0.024	0.082	0.000	0.000	0.000	18	95	60	8
	Site #4	1:23 p.m. to 2:24 p.m.	1.4	0.002	3.3	2.6	0.8	0.005	0.096	0.034	0.130	0.000	0.001	0.001	42	179	120	16
	Site #2B	2:33 p.m. to 3:34 p.m.	1.3	0.002	3.2	2.6	0.7	0.005	0.105	0.038	0.142	0.001	0.001	0.001	56	283	178	21
	Site #3A	3:37 p.m. to 4:41 p.m.	2.5	0.003	3.6	2.6	1.2	0.007	0.335	0.054	0.389	0.018	0.002	0.003	169	930	538	58
	Site #3B	4:56 p.m. to 5:57 p.m.	2.9	0.002	3.7	2.5	1.5	0.005	0.218	0.043	0.261	0.003	0.001	0.002	96	333	205	23
	Site #5	6:15 p.m. to 7:16 p.m.	2.8	0.001	3.5	2.5	1.2	0.003	0.169	0.031	0.199	0.003	0.001	0.001	48	102	75	11
	Site #6	7:22 p.m. to 8:23 p.m.	3.4	0.001	3.8	2.7	1.4	0.003	0.251	0.027	0.278	0.008	0.001	0.002	71	95	73	12
22-Nov-01	Site #1A	6:42 a.m. to 7:42 a.m.	0.6	0.001	2.8	2.9	0.0	0.000	0.051	0.011	0.062	0.003	0.001	0.001	24	230	141	20
	Site #4	7:52 a.m. to 8:52 a.m.	1.6	0.001	2.7	2.7	0.1	0.001	0.110	0.015	0.126	0.001	0.001	0.001	42	38	32	13
	Site #5	9:07 a.m. to 10:06 a.m.	1.4	0.002	3.1	2.8	0.4	0.001	0.170	0.023	0.194	0.001	0.001	0.001	82	97	75	21
	Site #6	10:12 a.m. to 11:12 a.m.	1.5	0.002	3.2	2.9	0.3	0.001	0.183	0.028	0.211	0.000	0.001	0.001	56	101	80	28
	Site #2D	11:25 a.m. to 12:25 p.m.	1.2	0.001	2.9	2.8	0.1	0.001	0.152	0.024	0.176	0.003	0.001	0.001	69	86	66	19
	Site #3B	12:37 p.m. to 1:37 p.m.	2.1	0.002	3.1	2.8	0.3	0.001	0.209	0.033	0.243	0.003	0.001	0.002	62	114	88	28
	Site #1B	1:43 p.m. to 2:43 p.m.	1.8	0.002	3.2	2.9	0.3	0.001	0.195	0.042	0.237	0.004	0.001	0.001	42	150	110	31
	Site #2D	2:45 p.m. to 3:45 p.m.	1.7	0.001	3.5	3.3	0.3	0.001	0.260	0.032	0.292	0.007	0.001	0.001	83	173	129	33
	Site #3B	3:53 p.m. to 4:53 p.m.	1.8	0.002	3.7	3.5	0.2	0.002	0.193	0.027	0.219	0.012	0.003	0.001	91	150	114	31
	Site #4	5:06 p.m. to 6:06 p.m.	1.2	0.000	2.7	2.6	0.1	0.000	0.108	0.020	0.129	0.002	0.001	0.001	36	87	72	25
	Site #5	6:31 p.m. to 7:31 p.m.	0.9	0.000	2.6	2.6	0.0	0.000	0.073	0.016	0.089	0.002	0.001	0.000	24	50	41	12
	Site #6	7:37 p.m. to 8:37 p.m.	0.8	0.000	2.6	2.6	0.0	0.000	0.062	0.015	0.078	0.000	0.000	0.000	22	48	38	10
30-Nov-01	Site #2D	6:07 a.m. to 7:08 a.m.	0.4	0.009	2.6	2.6	0.0	0.001	0.029	0.014	0.041	0.004	0.001	0.000	9	259	126	9
	Site #3B	7:14 a.m. to 8:15 a.m.	0.5	0.004	2.3	2.3	0.0	0.000	0.049	0.020	0.068	0.005	0.000	0.000	16	27	9	2
	Site #5	8:24 a.m. to 9:26 a.m.	0.5	0.003	2.6	2.6	0.0	0.000	0.029	0.019	0.047	0.001	0.000	0.000	12	30	16	4
	Site #6	9:30 a.m. to 10:31 a.m.	0.5	0.005	2.6	2.6	0.0	0.000	0.022	0.017	0.039	0.000	0.000	0.000	11	13	9	3
	Site #4	10:55 a.m. to 11:55 a.m.	0.8	0.012	2.3	2.3	0.0	0.000	0.012	0.011	0.023	0.001	0.001	0.000	8	10	8	3
	Site #1B	12:10 p.m. to 1:11 p.m.	0.8	0.009	2.1	2.1	0.0	0.001	0.055	0.020	0.074	0.005	0.001	0.000	18	9	7	2
	Site #2D	1:15 p.m. to 2:15 p.m.	0.8	0.009	2.2	2.1	0.0	0.001	0.064	0.019	0.082	0.008	0.002	0.000	29	27	16	3
	Site #3B	2:29 p.m. to 3:30 p.m.	0.9	0.004	2.2	2.0	0.2	0.001	0.069	0.024	0.094	0.005	0.002	0.000	29	56	33	5
	Site #5	3:38 p.m. to 4:40 p.m.	0.9	0.003	2.4	2.2	0.2	0.000	0.036	0.029	0.067	0.000	0.002	0.000	12	24	14	3
	Site #6	4:51 p.m. to 5:51 p.m.	1.3	0.002	2.4	2.3	0.1	0.000	0.091	0.029	0.121	0.003	0.002	0.000	29	27	17	4
	Site #4	6:02 p.m. to 7:01 p.m.	2.2	0.003	2.6	2.3	0.3	0.001	0.139	0.031	0.171	0.003	0.002	0.001	46	13	10	4
	Site #1B	7:26 p.m. to 8:20 p.m.	1.0	0.002	2.3	2.0	0.3	0.001	0.081	0.033	0.113	0.003	0.002	0.001	41	30	11	4
One-hour guideline			**13.0**	**0.082**	**n/a**	**n/a**	**n/a**	**0.172**	**n/a**	**0.212**	**n/a**	**2.0**	**n/a**	**0.010**	**n/a**	**n/a**	**n/a**	**n/a**

no data Indicates that analyzer was not operational for indicated time period. n/a No one hour guideline.

Site #1A North side of Yellowhead Trail 300 m east of 170 St.
Site #1B Unisource - 121A Ave. and 165 St.
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List of Air Quality Parameters

CO - carbon monoxide
O_3 - ozone
THC - total hydrocarbons
CH_4 - methane
RHC - reactive hydrocarbons
SO_2 - sulphur dioxide
NO - nitric oxide
NO_2 - nitrogen dioxide
NO_x - total oxides of nitrogen
NH_3 - ammonia
TRS - total reduced sulphur
H_2S - hydrogen sulphide
PAH - polycyclic aromatic hydrocarbons
TSP - total suspended particulates
PM_{10} - inhalable particulates
$PM_{2.5}$ - respirable particulates

Table 10 One-hour average air quality parameter concentrations at each MAML monitoring site in northwest Edmonton in January and February 2002.

Date	Site #	Monitoring Time (M.S.T.)	CO	O_3	THC	CH_4	RHC	SO_2	NO	NO_2	NO_x	NH_3	TRS	H_2S	PAH	TSP	PM_{10}	$PM_{2.5}$
			ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ng/m^3	µg/m^3	µg/m^3	µg/m^3
9-Jan-02	Site #2D	6:46 a.m. to 7:45 a.m.	0.4	0.009	2.0	2.0	0.0	0.001	0.056	0.020	0.078	0.006	0.001	0.000	36	28	19	3
	Site #1B	7:49 a.m. to 8:51 a.m.	0.5	0.003	1.9	1.8	0.1	0.002	0.061	0.036	0.095	0.010	0.000	0.000	41	6	5	2
	Site #5	9:02 a.m. to 10:01 a.m.	0.5	0.001	2.0	1.9	0.2	0.001	0.064	0.034	0.100	0.001	0.000	0.000	43	87	48	6
	Site #6	10:07 a.m. to 11:07 a.m.	0.3	0.005	1.9	1.9	0.0	0.001	0.028	0.027	0.057	0.000	0.000	0.000	23	13	8	2
	Site #4	11:15 a.m. to 12:14 p.m.	0.2	0.015	2.0	2.0	0.0	0.001	0.010	0.014	0.025	0.002	0.000	0.000	9	16	9	2
	Site #3B	12:27 p.m. to 1:26 p.m.	0.3	0.013	2.0	1.8	0.2	0.003	0.017	0.018	0.036	0.002	0.000	0.000	18	22	14	3
	Site #2D	1:32 p.m. to 2:35 p.m.	0.3	0.013	2.1	1.9	0.1	0.001	0.015	0.019	0.035	0.002	0.000	0.000	13	25	15	2
	Site #3A	2:43 p.m. to 3:43 p.m.	0.6	0.006	2.0	1.9	0.1	0.002	0.051	0.028	0.077	0.010	0.000	0.000	47	68	42	6
	Site #2B	3:47 p.m. to 4:47 p.m.	0.5	0.006	2.6	2.5	0.2	0.002	0.018	0.025	0.043	0.001	0.000	0.000	21	97	60	7
	Site #4	4:55 p.m. to 5:55 p.m.	0.9	0.002	3.2	3.0	0.2	0.001	0.035	0.031	0.066	0.001	0.000	0.000	40	25	16	3
	Site #5	6:11 p.m. to 7:12 p.m.	3.5	0.002	3.3	2.1	1.2	0.002	0.153	0.031	0.184	0.005	0.001	0.001	70	16	12	6
	Site #6	7:18 p.m. to 8:18 p.m.	3.0	0.003	3.0	2.1	0.9	0.002	0.187	0.034	0.222	0.004	0.001	0.002	53	28	25	15
10-Jan-02	Site #6	6:27 a.m. to 7:26 a.m.	2.2	0.002	2.8	2.6	0.2	0.001	0.103	0.028	0.130	0.002	0.001	no data	45	6	5	2
	Site #5	7:35 a.m. to 8:38 a.m.	4.5	0.003	3.4	2.6	0.7	0.003	0.182	0.036	0.217	0.014	0.001	no data	171	21	14	5
	Site #4	8:49 a.m. to 9:49 a.m.	2.5	0.002	3.2	2.2	1.0	0.005	0.208	0.047	0.254	0.008	0.002	no data	87	37	23	5
	Site #2D	10:07 a.m. to 11:07 a.m.	0.6	0.004	2.3	2.3	0.1	0.003	0.075	0.035	0.109	0.007	0.000	no data	33	64	39	6
	Site #3A	11:18 a.m. to 12:18 p.m.	0.7	0.005	2.4	2.2	0.2	0.003	0.071	0.036	0.106	0.003	0.000	no data	72	145	82	11
	Site #2B	12:22 p.m. to 1:23 p.m.	0.4	0.013	3.1	2.9	0.1	0.001	0.018	0.018	0.036	0.002	0.000	no data	17	67	40	6
	Site #6	1:33 p.m. to 2:33 p.m.	0.5	0.012	2.1	2.1	0.0	0.003	0.014	0.021	0.035	0.001	0.001	no data	11	84	52	7
	Site #5	2:39 p.m. to 3:39 p.m.	0.8	0.003	2.3	2.2	0.2	0.005	0.054	0.034	0.089	0.006	0.000	no data	37	190	117	16
	Site #3B	3:48 p.m. to 4:49 p.m.	0.9	0.003	4.0	3.9	0.1	0.002	0.073	0.031	0.105	0.007	0.000	no data	59	256	170	22
	Site #2D	4:54 p.m. to 5:55 p.m.	1.0	0.002	3.8	3.5	0.3	0.003	0.126	0.032	0.159	0.011	0.001	no data	50	255	172	26
	Site #1B	6:00 p.m. to 7:00 p.m.	1.2	0.002	2.1	2.0	0.1	0.004	0.195	0.039	0.234	0.006	0.002	no data	81	146	99	15
	Site #4	7:16 p.m. to 8:16 p.m.	1.0	0.001	2.5	2.4	0.1	0.000	0.038	0.035	0.074	0.004	0.001	no data	19		no data	
19-Feb-02	Site #2A	6:36 a.m. to 7:35 a.m.	0.4	0.023	6.1	5.7	0.4	0.000	0.007	0.007	0.013	0.001	0.000	0.000	3	63	46	9
	Site #4	7:55 a.m. to 8:54 a.m.	0.4	0.021	2.4	2.2	0.2	0.000	0.001	0.013	0.013	0.000	0.000	0.000	7	8	5	1
	Site #6	9:03 a.m. to 10:04 a.m.	0.3	0.022	2.1	2.1	0.0	0.000	0.001	0.008	0.009	0.000	0.000	0.000	3	6	4	1
	Site #5	10:11 a.m. to 11:11 a.m.	0.3	0.022	2.2	2.2	0.0	0.000	0.001	0.008	0.009	0.000	0.000	0.000	2	6	4	1
	Site #3A	11:18 a.m. to 12:17 p.m.	0.3	0.023	2.2	2.2	0.0	0.000	0.007	0.011	0.017	0.000	0.000	0.000	7	31	19	3
	Site #2B	12:21 p.m. to 1:22 p.m.	0.4	0.018	2.2	2.2	0.0	0.000	0.013	0.015	0.028	0.000	0.000	0.000	24	30	23	4
	Site #2A	1:30 p.m. to 2:30 p.m.	0.3	0.020	6.5	6.0	0.5	0.000	0.010	0.014	0.024	0.001	0.000	0.000	7	93	70	14
	Site #2B	2:39 p.m. to 3:39 p.m.	0.4	0.016	2.2	2.2	0.0	0.000	0.017	0.017	0.034	0.002	0.000	0.000	22	29	21	3
	Site #3A	3:45 p.m. to 4:53 p.m.	0.5	0.017	2.2	2.2	0.0	0.000	0.015	0.016	0.030	0.001	0.000	0.000	13	29	20	3
	Site #4	5:03 p.m. to 6:03 p.m.	0.5	0.011	2.2	2.2	0.0	0.000	0.006	0.020	0.026	0.000	0.000	0.000	10	26	17	2
	Site #5	6:16 p.m. to 7:16 p.m.	0.5	0.010	2.2	2.2	0.0	0.000	0.003	0.020	0.022	0.000	0.000	0.000	6	5	3	1
	Site #6	7:23 p.m. to 8:23 p.m.	0.8	0.001	2.5	2.4	0.1	0.000	0.018	0.026	0.044	0.000	0.000	0.000	11	11	7	1
21-Feb-02	Site #2B	6:46 a.m. to 7:45 a.m.	1.2	0.001	3.0	2.7	0.3	0.001	0.112	0.043	0.156	0.002	0.001	0.001	52	196	124	14
	Site #4	7:55 a.m. to 8:54 a.m.	1.2	0.000	2.7	2.5	0.1	0.000	0.084	0.034	0.117	0.005	0.001	0.000	38	150	95	11
	Site #6	9:04 a.m. to 10:03 a.m.	1.3	0.002	2.7	2.6	0.1	0.001	0.079	0.034	0.114	0.002	0.001	0.000	34	169	109	13
	Site #5	10:08 a.m. to 11:07 a.m.	0.7	0.005	2.6	2.5	0.0	0.000	0.033	0.029	0.063	0.002	0.000	0.000	11	100	66	8
	Site #3A	11:17 a.m. to 12:16 p.m.	0.5	0.012	2.3	2.2	0.1	0.000	0.025	0.027	0.053	0.002	0.000	0.000	18	126	79	9
	Site #2A	12:26 p.m. to 1:25 p.m.	0.3	0.018	3.2	3.3	0.4	0.005	0.007	0.018	0.027	0.001	0.000	0.000	9	95	61	8
	Site #2B	1:33 p.m. to 2:32 p.m.	0.3	0.020	2.1	2.0	0.0	0.006	0.009	0.017	0.026	0.002	0.000	0.000	13	87	56	7
	Site #3A	2:41 p.m. to 3:40 p.m.	0.4	0.018	2.0	1.9	0.0	0.005	0.021	0.020	0.041	0.008	0.000	0.000	20	155	110	16
	Site #4	3:49 p.m. to 4:48 p.m.	0.3	0.022	2.1	2.1	0.0	0.000	0.002	0.012	0.014	0.001	0.000	0.000	4	53	34	7
	Site #2A	5:07 p.m. to 6:06 p.m.	0.4	0.007	2.8	2.8	0.5	0.000	0.010	0.026	0.037	0.002	0.000	0.000	12	80	55	13
	Site #5	6:21 p.m. to 7:20 p.m.	0.4	0.008	2.0	1.9	0.1	0.000	0.001	0.023	0.025	0.002	0.000	0.000	5	44	31	6
	Site #6	7:29 p.m. to 8:28 p.m.	0.7	0.002	2.3	2.2	0.1	0.000	0.025	0.027	0.054	0.006	0.000	0.000	15	72	45	9
One-hour guideline			**13.0**	**0.082**	**n/a**	**n/a**	**n/a**	**0.172**	**n/a**	**0.212**	**n/a**	**2.0**	**n/a**	**0.010**	**n/a**	**n/a**	**n/a**	**n/a**

no data Indicates that analyzer was not operational for indicated time period. n/a No one hour guideline.

Site #1A North side of Yellowhead Trail 300 m east of 170 St.
Site #1B Unisource - 121A Ave. and 165 St.
Site #2A Mistatim Industrial - 129 Ave. and 165 St.
Site #2B Mistatim Industrial - 128 Ave. and 160 St.
Site #2D Polytubes - 123 Ave. and 160 St.
Site #3A Brown Industrial - 153 St. and 128 Ave.
Site #3B Yellowhead ABS Casino - south side of Yellowhead Trail and 152 St.
Site #4 Wellington Park - 135 Ave. and 137 St.
Site #5 Dovercourt - 123 Ave. and 140 St. (AADAC Bldg.)
Site #6 Sherbrooke Park - 122A and 131 St.

List of Air Quality Parameters

CO - carbon monoxide
O_3 - ozone
THC - total hydrocarbons
CH_4 - methane
RHC - reactive hydrocarbons
SO_2 - sulphur dioxide
NO - nitric oxide
NO_2 - nitrogen dioxide
NO_x - total oxides of nitrogen
NH_3 - ammonia
TRS - total reduced sulphur
H_2S - hydrogen sulphide
PAH - polycyclic aromatic hydrocarbons
TSP - total suspended particulates
PM_{10} - inhalable particulates
$PM_{2.5}$ - respirable particulates

Table 11 Weather data for each MAML monitoring site in northwest Edmonton.

Date	Site #	Monitoring Time (M.S.T.)	Temp. DegC	RH %	WSP KPH	WDR
18-Jun-01	Site #3B	6:17 a.m. to 7:16 a.m.	11.0	71.9	8.6	W
	Site #5	7:26 a.m. to 8:25 a.m.	13.2	64.4	3.8	WSW
	Site #6	8:31 a.m. to 9:31 a.m.	14.4	60.3	5.4	WNW
	Site #4	9:45 a.m. to 10:44 a.m.	13.6	59.5	7.9	W
	Site #2D	11:05 a.m. to 12:04 p.m.	16.2	53.1	19.3	WNW
	Site #1B	12:15 p.m. to 1:15 p.m.	19.1	40.0	16.0	WNW
	Site #3B	1:22 p.m. to 2:23 p.m.	19.6	39.0	16.8	WSW
	Site #5	2:32 p.m. to 3:31 p.m.	22.2	31.7	4.7	W
	Site #6	3:37 p.m. to 4:37 p.m.	22.0	32.4	7.7	W
	Site #4	4:48 p.m. to 5:48 p.m.	11.7	90.7	3.8	SSE
	Site #2D	6:00 p.m. to 7:00 p.m.	16.6	59.8	3.9	ESE
	Site #1B	7:04 p.m. to 8:04 p.m.	14.5	72.9	9.3	WSW
19-Jun-01	Site #2B	5:31 a.m. to 6:35 a.m.	11.0	78.5	8.5	WSW
	Site #3B	6:49 a.m. to 7:48 a.m.	12.5	72.8	7.0	NNE
	Site #4	8:07 a.m. to 9:06 a.m.	13.6	72.8	6.0	SW
	Site #6	9:30 a.m. to 10:30 a.m.	16.8	55.5	3.9	ENE
	Site #5	10:38 a.m. to 11:37 a.m.	16.7	55.9	4.5	ESE
	Site #1B	11:50 a.m. to 12:49 p.m.	18.8	50.6	8.5	NE
	Site #2D	12:52 p.m. to 1:53 p.m.	19.8	45.0	10.3	WNW
	Site #3B	1:59 p.m. to 3:13 p.m.	21.3	39.4	7.7	NE
	Site #4	3:26 p.m. to 4:28 p.m.	22.9	38.5	5.8	NE
	Site #6	4:38 p.m. to 5:37 p.m.	21.4	45.2	3.9	ENE
	Site #5	5:43 p.m. to 6:45 p.m.	20.2	49.4	3.6	E
	Site #1B	6:54 p.m. to 7:54 p.m.	19.6	52.3	5.8	E
21-Jun-01	Site #6	6:02 a.m. to 7:01 a.m.	18.9	50.4	3.4	NNE
	Site #5	7:06 a.m. to 8:06 a.m.	22.6	40.1	5.3	NNE
	Site #1B	8:16 a.m. to 9:16 a.m.	20.9	50.4	6.5	ENE
	Site #2B	9:20 a.m. to 10:20 a.m.	25.7	34.7	4.7	ENE
	Site #3B	10:27 a.m. to 11:26 a.m.	25.2	32.6	6.7	NE
	Site #4	11:37 a.m. to 12:37 p.m.	27.1	29.6	4.3	NE
	Site #6	12:56 p.m. to 1:56 p.m.	28.1	27.2	4.9	E
	Site #5	2:02 p.m. to 3:02 p.m.	27.6	27.5	4.0	SSE
	Site #2D	3:21 p.m. to 4:21 p.m.	26.8	29.1	9.6	WSW
	Site #3B	4:30 p.m. to 5:30 p.m.	28.2	26.7	6.7	WSW
	Site #1B	5:37 p.m. to 6:36 p.m.	28.6	26.5	4.5	S
	Site #4	6:48 p.m. to 7:48 p.m.	26.0	29.8	2.8	S
22-Jun-01	Site #5	5:56 a.m. to 6:55 a.m.	17.2	68.0	6.2	W
	Site #1B	7:06 a.m. to 8:05 a.m.	17.6	61.9	15.4	W
	Site #3B	8:13 a.m. to 9:13 a.m.	19.7	49.8	18.2	WNW
	Site #2B	9:23 a.m. to 10:22 a.m.	19.8	46.3	17.6	WNW
	Site #4	10:43 a.m. to 11:43 a.m.	21.9	39.8	11.7	WNW
	Site #6	11:53 a.m. to 12:51 p.m.	24.3	32.1	9.7	WNW
	Site #5	1:00 p.m. to 1:59 p.m.	24.7	36.6	5.2	WNW
	Site #3A	2:18 p.m. to 3:21 p.m.	20.6	55.1	7.1	WSW
	Site #2B	3:43 p.m. to 4:41 p.m.	23.0	38.1	12.3	WNW
	Site #3B	4:48 p.m. to 5:47 p.m.	23.7	31.5	13.1	NW
	Site #4	5:58 p.m. to 6:57 p.m.	21.2	35.0	11.0	NW
	Site #6	7:07 p.m. to 8:06 p.m.	20.4	36.2	8.6	WNW

Date	Site #	Monitoring Time (M.S.T.)	Temp. DegC	RH %	WSP KPH	WDR
14-Nov-01	Site #6	6:06 a.m. to 7:08 a.m.	2.0	88.8	2.3	WSW
	Site #3B	7:28 a.m. to 8:28 a.m.	3.5	81.6	5.8	SW
	Site #3A	8:42 a.m. to 9:42 a.m.	5.0	73.7	9.0	W
	Site #2B	9:48 a.m. to 10:48 a.m.	5.7	71.6	6.3	WNW
	Site #4	10:55 a.m. to 11:56 a.m.	7.1	66.0	5.2	WNW
	Site #5	12:17 p.m. to 1:18 p.m.	8.7	59.4	3.1	SSW
	Site #6	1:23 p.m. to 2:23 p.m.	10.5	51.9	4.5	SW
	Site #5	2:28 p.m. to 3:28 p.m.	11.5	48.5	3.0	S
	Site #3A	3:36 p.m. to 4:37 p.m.	9.9	54.4	5.8	SSE
	Site #2B	4:40 p.m. to 5:39 p.m.	7.8	63.1	4.2	SSE
	Site #2A	5:47 p.m. to 6:48 p.m.	7.3	64.5	6.6	SSW
	Site #4	7:23 p.m. to 8:23 p.m.	2.0	85.8	1.4	SSW
19-Nov-01	Site #4	6:39 a.m. to 7:39 a.m.	-4.2	80.6	5.7	SSW
	Site #3A	7:51 a.m. to 8:52 a.m.	-5.0	83.5	8.5	SSW
	Site #2B	8:55 a.m. to 9:55 a.m.	-4.5	81.9	6.3	WSW
	Site #3B	10:01 a.m. to 11:01 a.m.	-3.9	78.5	7.7	SSW
	Site #5	11:17 a.m. to 12:08 p.m.	-1.6	69.8	3.4	SSW
	Site #6	12:13 p.m. to 1:14 p.m.	0.8	60.5	4.6	SSW
	Site #4	1:23 p.m. to 2:24 p.m.	2.2	56.7	7.3	SW
	Site #2B	2:33 p.m. to 3:34 p.m.	4.8	47.0	5.2	S
	Site #3A	3:37 p.m. to 4:41 p.m.	4.4	46.7	3.9	SSW
	Site #3B	4:56 p.m. to 5:57 p.m.	2.0	57.6	2.4	SSE
	Site #5	6:15 p.m. to 7:16 p.m.	-1.3	75.8	1.1	S
	Site #6	7:22 p.m. to 8:23 p.m.	-1.1	79.6	1.4	SE
22-Nov-01	Site #1A	6:42 a.m. to 7:42 a.m.	-8.4	98.8	2.3	WSW
	Site #4	7:52 a.m. to 8:52 a.m.	-8.0	97.8	1.9	SE
	Site #5	9:07 a.m. to 10:06 a.m.	-5.3	96.2	2.1	SE
	Site #6	10:12 a.m. to 11:12 a.m.	-4.5	94.7	2.4	SSE
	Site #2D	11:25 a.m. to 12:25 p.m.	-4.0	96.3	3.0	S
	Site #3B	12:37 p.m. to 1:37 p.m.	-3.2	92.9	4.2	ESE
	Site #1B	1:43 p.m. to 2:43 p.m.	-2.7	92.4	3.5	SSW
	Site #2D	2:45 p.m. to 3:45 p.m.	-2.6	94.3	5.9	WNW
	Site #3B	3:53 p.m. to 4:53 p.m.	-3.2	96.6	6.1	WNW
	Site #4	5:06 p.m. to 6:06 p.m.	-3.4	98.9	3.0	W
	Site #5	6:31 p.m. to 7:31 p.m.	-3.2	97.6	2.6	S
	Site #6	7:37 p.m. to 8:37 p.m.	-3.4	99.9	2.3	S
30-Nov-01	Site #2D	6:07 a.m. to 7:08 a.m.	-15.0	86.2	17.9	NW
	Site #3B	7:14 a.m. to 8:15 a.m.	-15.1	86.1	12.5	WNW
	Site #5	8:24 a.m. to 9:26 a.m.	-15.2	82.5	5.1	WNW
	Site #6	9:30 a.m. to 10:31 a.m.	-15.7	78.8	5.9	NW
	Site #4	10:55 a.m. to 11:55 a.m.	-15.9	78.0	6.4	WNW
	Site #1B	12:10 p.m. to 1:11 p.m.	-15.0	82.6	7.0	W
	Site #2D	1:15 p.m. to 2:15 p.m.	-14.1	81.9	7.6	WNW
	Site #3B	2:29 p.m. to 3:30 p.m.	-14.2	80.9	6.4	W
	Site #5	3:38 p.m. to 4:40 p.m.	-15.0	85.2	1.8	SSE
	Site #6	4:51 p.m. to 5:51 p.m.	-15.7	90.8	3.2	E
	Site #4	6:02 p.m. to 7:01 p.m.	-17.2	89.2	2.4	SSE
	Site #1B	7:26 p.m. to 8:20 p.m.	-15.5	91.6	6.9	SSE

Site #1A North side of Yellowhead Trail 300 m east of 170 St.
Site #1B Unisource - 121A Ave. and 165 St.
Site #2A Mistatim Industrial - 129 Ave. and 165 St.
Site #2B Mistatim Industrial - 128 Ave. and 160 St.
Site #2D Polytubes - 123 Ave. and 160 St.
Site #3A Brown Industrial - 153 St. and 128 Ave.
Site #3B Yellowhead ABS Casino - south side of Yellowhead Trail and 152 St.
Site #4 Wellington Park - 135 Ave. and 137 St.
Site #5 Dovercourt - 123 Ave. and 140 St. (AADAC Bldg.)
Site #6 Sherbrooke Park - 122A and 131 St.

Temp. - ambient temperature
RH - relative humidity
WSD - wind speed
WDR - wind direction

Table 11(cont.) Weather data for each MAML monitoring site in northwest Edmonton.

Date	Site #	Monitoring Time (M.S.T.)	Temp. DegC	RH %	WSP KPH	WDR
09-Jan-02	Site #2D	6:46 a.m. to 7:45 a.m.	0.2	85.1	13.4	W
	Site #1B	7:49 a.m. to 8:51 a.m.	0.1	84.3	7.2	W
	Site #5	9:02 a.m. to 10:01 a.m.	1.0	77.7	4.4	W
	Site #6	10:07 a.m. to 11:07 a.m	1.9	72.9	6.3	W
	Site #4	11:15 a.m. to 12:14 p.m	4.5	63.0	5.0	W
	Site #3B	12:27 p.m. to 1:26 p.m.	4.8	63.4	11.3	SW
	Site #2D	1:32 p.m. to 2:35 p.m.	5.4	62.0	8.8	SW
	Site #3A	2:43 p.m. to 3:43 p.m.	5.3	63.2	6.9	SW
	Site #2B	3:47 p.m. to 4:47 p.m.	2.7	71.9	5.1	SW
	Site #4	4:55 p.m. to 5:55 p.m.	0.9	79.1	2.4	W
	Site #5	6:11 p.m. to 7:12 p.m.	-1.7	92.4	1.5	SE
	Site #6	7:18 p.m. to 8:18 p.m.	-1.9	92.2	1.8	S
10-Jan-02	Site #6	6:27 a.m. to 7:26 a.m.	-4.8	92.0	1.2	S
	Site #5	7:35 a.m. to 8:38 a.m.	-4.4	90.5	1.9	SW
	Site #4	8:49 a.m. to 9:49 a.m.	-2.5	80.2	3.1	SW
	Site #2D	10:07 a.m. to 11:07 a.m	2.0	60.7	3.9	SW
	Site #3A	11:18 a.m. to 12:18 p.m	4.3	52.9	8.0	S
	Site #2B	12:22 p.m. to 1:23 p.m	3.7	53.4	7.6	W
	Site #6	1:33 p.m. to 2:33 p.m.	3.1	56.3	6.3	W
	Site #5	2:39 p.m. to 3:39 p.m.	2.5	61.4	4.0	W
	Site #3B	3:48 p.m. to 4:49 p.m.	2.6	58.8	7.4	W
	Site #2D	4:54 p.m. to 5:55 p.m.	2.0	61.2	7.7	W
	Site #1B	6:00 p.m. to 7:00 p.m.	1.5	62.0	5.3	W
	Site #4	7:16 p.m. to 8:16 p.m.	0.3	66.4	1.7	SW
19-Feb-02	Site #2A	6:36 a.m. to 7:35 a.m.	-3.5	97.1	17.9	SE
	Site #4	7:55 a.m. to 8:54 a.m.	-4.7	98.4	13.4	SE
	Site #6	9:03 a.m. to 10:04 a.m.	-4.4	91.8	12.4	S
	Site #5	10:11 a.m. to 11:11 a.m	-3.5	90.1	14.1	S
	Site #3A	11:18 a.m. to 12:17 p.m	-2.9	89.1	25.8	S
	Site #2B	12:21 p.m. to 1:22 p.m.	-1.4	85.1	22.2	SE
	Site #2A	1:30 p.m. to 2:30 p.m.	-0.8	83.1	16.5	S
	Site #2B	2:39 p.m. to 3:39 p.m.	-0.4	82.7	20.5	SE
	Site #3A	3:45 p.m. to 4:53 p.m.	0.6	78.4	15.9	SE
	Site #4	5:03 p.m. to 6:03 p.m.	-0.7	84.5	11.9	SE
	Site #5	6:16 p.m. to 7:16 p.m.	-1.4	89.4	10.2	SE
	Site #6	7:23 p.m. to 8:23 p.m.	-1.9	92.1	3.2	SE
21-Feb-02	Site #2B	6:46 a.m. to 7:45 a.m.	-6.7	70.1	6.4	S
	Site #4	7:55 a.m. to 8:54 a.m.	-5.7	64.8	3.3	S
	Site #6	9:04 a.m. to 10:03 a.m.	-2.5	56.4	2.5	S
	Site #5	10:08 a.m. to 11:07 a.m	-1.6	55.7	4.0	S
	Site #3A	11:17 a.m. to 12:16 p.m	1.5	36.3	7.6	S
	Site #2A	12:26 p.m. to 1:25 p.m	2.4	31.9	11.2	E
	Site #2B	1:33 p.m. to 2:32 p.m.	2.6	31.9	15.0	SE
	Site #3A	2:41 p.m. to 3:40 p.m.	2.6	35.5	17.0	E
	Site #4	3:49 p.m. to 4:48 p.m.	1.6	49.2	8.2	SE
	Site #2A	5:07 p.m. to 6:06 p.m.	0.9	60.1	6.2	E
	Site #5	6:21 p.m. to 7:20 p.m.	0.1	67.1	5.6	SE
	Site #6	7:29 p.m. to 8:28 p.m.	-0.2	71.8	4.2	NE

Site #1A North side of Yellowhead Trail 300 m east of 170 St.
Site #1B Unisource - 121A Ave. and 165 St.
Site #2A Mistatim Industrial - 129 Ave. and 165 St.
Site #2B Mistatim Industrial - 128 Ave. and 160 St.
Site #2D Polytubes - 123 Ave. and 160 St.
Site #3A Brown Industrial - 153 St. and 128 Ave.
Site #3B Yellowhead ABS Casino - south side of Yellowhead Trail and 152 St.
Site #4 Wellington Park - 135 Ave. and 137 St.
Site #5 Dovercourt - 123 Ave. and 140 St. (AADAC Bldg.)
Site #6 Sherbrooke Park - 122A and 131 St.

Temp. - ambient temperature
RH - relative humidity
WSD - wind speed
WDR - wind direction